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# THE ZOOLOGIST:

A
POPULAR MONTHLY MAGAZINE
OF
NATURAL HISTORY,
AND
JOURNAL FOR RECORDING FACTS AND ANECDOTES
RELATING TO
QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.
THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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# THE INSECT HUNTERS,

By EDWARD NEWMAN, F.L.S., F.Z.S.

LATE PRESIDENT OF THE ENTOMOLOGICAL SOCIETY.

I have written this little book expressly for those who do not pretend to consider themselves experienced naturalists. I do not assume any knowledge on the part of the learner, but begin at the beginning, and attempt to educate the reader up to the point of understanding the more elaborate and learned Introductions to the Science; indeed, I am not altogether without a hope that some will consider this inexpensive and unassuming book a sufficient Introduction to the Science.—Edward Newman.

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## *Presentation of a Testimonial to the Editor, by the Contributors to, and Readers of, the 'Zoologist.'*

"To EDWARD NEWMAN, Esq., F.L.S., F.Z.S., Mem. Imp. L.-C. Acad.,
Late President of the Entomological Society; &c., &c.

"DEAR SIR, — A high appreciation of the services rendered by yourself, in the promotion and diffusion of scientific knowledge, induced several gentlemen, of kindred tastes, to unite as a Committee for eliciting some public expression of a like estimation, which they had ample grounds for believing was very generally entertained by naturalists.

"It was not their object to obtain any large amount of Subscriptions, but rather to afford a suitable opportunity for the expression of a sincere and grateful goodwill on the part of those who had benefited by your persevering and unobtrusive labours in a good cause.

"The large sacrifice of your own time in assisting younger entomologists in the examination of the rich collection belonging to the Entomological Club; and in various other modes on behalf of Science and scientific men; the courtesy so constantly shown to all who seek information from you; the independence of your opinions, truthfully expressed, without giving just grounds of offence to those who differ from you; — these, and many other considerations, must amply warrant the step taken by the Committee; while also rendering explanations of that step almost needless among those persons who devote themselves to the study of Natural History.

"The 'Zoologist' has become a repertory of facts, in one department of Natural History, at once valuable as voluminous, and can scarcely be paralleled, in these respects, by any work in the libraries of Science. Botanists have had good reason to regret that the issue of its precursor and companion, the 'Phytologist,' long similarly serviceable in accumulating and diffusing knowledge in the allied branch of Natural History, was interrupted. While your own works, of a more individual character—as the 'History of British Ferns,' the

'Insect Hunters,' &c., &c.—have worthily procured for their author honourable place among the earnest promoters of Science.

"The consciousness of success achieved in the usually distinct spheres, the popular and technical, should bear with it its own reward, to one who has exerted himself so efficiently for public objects. We trust that it does so. But we also trust that you will consent to receive our slight testimony of goodwill and appreciation, conveyed in the appropriate form of Scientific Books, the merits of which may render them useful to you, while their costliness might have deterred you from indulging your taste by their purchase.

"Earnestly and respectfully we express our hope that no excess of modesty will prevent your assent to our wish that this Address should be printed in the 'Zoologist,' and remain,

"Dear Sir,
"Ever most faithfully yours,
"THE COMMITTEE."
(Acting on behalf of the undermentioned gentlemen.)

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### *To this Address the Editor has replied as follows.*

"GENTLEMEN, — It would be untruthful in me to affect surprise, either at the cordial expression of goodwill contained in your Address, or at the value of the present by which it is accompanied. I have long been cognizant of the compliment intended me, and at first I did my best to escape it; positively refusing the use of the 'Zoologist' as a medium for publishing and promoting your views, and thus depriving you of the only means of communication between yourselves and that very limited portion of the public to whom my name is known.

"The following paragraphs, reprinted from the wrappers of the 'Zoologist,' will, I think, establish this assertion. The first dates March 1, 1860, and appears simultaneously with the Rev. Mr. Greene's earliest allusion to the subject:—

> "It must be understood that I take exception to the Rev. Mr. Greene's proposition, as conveyed in the second paragraph of his communication. I am scarcely conceited enough to suppose that the motion will find a seconder; but, in the remote possibility of such a case, I beg to say that the 'Zoologist' is not at his service for such a purpose."

"The second bears date April 1, 1860, and is in direct answer to an urgent request:—

> "My brief note on the subject of the Rev. Joseph Greene's most complimentary proposition appears to have been regarded by some readers as uncourteous on my part. I regret this should be the case. My feeling against a man's having any complicity in getting up a Testimonial to himself is very strong indeed; and were the wrapper of the 'Zoologist' ever used for such a purpose, even though in the form of a paid advertisement (*verbum sapienti*), I should certainly subject myself to unworthy suspicions. I therefore say, most distinctly, that the 'Zoologist' is hermetically sealed against any communications thereanent. May I add a word more? I shall be obliged if my friends will abstain from writing to me on the subject."

"The reason for my taking this course was threefold: in the first place, I have little taste for Testimonials, having often, as I believe, seen them given to the undeserving; in the second place, I never coveted for myself anything beyond the approbation of those who purchase my publications, and who, in the very fact of such purchase and approbation, abundantly repay any exertions of mine; and in the third place, I could not help feeling that in singling me out from a host of fellow-labourers in the same walks of Science, you placed me in an invidious and therefore undesirable position: in botanical, ornithological and entomological journalism, how much has been accomplished by others! how many have been labouring with zeal and success fully equal to my own! In accepting this Testimonial at your hands, I cannot escape the conviction that I am the cause of injustice to others; injustice which, though they are too high-minded to resent, I cannot defend or palliate on the plea of its being on my part entirely unintentional.

"Then, again, as I became aware of your fixed determination, as a Committee, to persevere, and as I was from time to time, by more or less direct means, made cognizant of your proceedings, I could not help feeling that the absence of many a familiar and friendly name from the list was in itself a silent rebuke, a demonstration of conscientious disapproval, although only perceptible to him who could appreciate the cause.

"But, turning to the other and brighter side of the picture, the very circumstances which seemed to wound, carried with them their own cure. Exactly in proportion as so many of my familiar friends held aloof; exactly in proportion as this mark of esteem originated with and has been carried out by gentlemen who knew me only as author and journalist, from gentlemen whom I have never visited and who have never visited me; so is this Testimonial immeasurably more valuable than it would have been had the design emanated from my nearest and dearest friends, from men whose partiality might blind their judgment, and who would be too glad to embrace any opportunity of doing me a kindness. This munificent present and this gratifying Address stand on a very different footing; and I accept them, most gratefully, as tributes to supposed merit, as acknowledgments of supposed services in the cause of Natural History.

"You do not explain, or even allude to, an act of considerate kindness that has been peculiarly gratifying to me; I mean your allowing me to choose the form the Testimonial should take. I believe that the more usual present of plate, or some durable ornament bearing a record of the event, would have been more consonant with the wishes of some of those who have so liberally subscribed; but you, as a Committee, have, without hesitation, yielded to my strongly expressed wish for books, allowing me to make my own selection; a selection which I trust will be as serviceable to others as to myself; and the remote probability of their becoming obsolete, or being worn out, before these events happen to myself, cannot be reasonably contemplated. And let me here express a fervent hope that, should my life be spared for a few more winters, my choice will be approved by those who occasionally seek, at my hands, the information you have thus afforded me the opportunity of diffusing.

"A printed List of the Subscribers will appear in every volume; and you may believe me, gentlemen, when I say that I shall point to this List as the record of one of the most pleasant events that have occurred during the course of my Natural-History labours; labours always of love, but now, by your kindness, rendered doubly agreeable.

"Finally, I may express the great pleasure I feel in acceding, without a moment's hesitation, to your request to insert your flattering Address in the pages of this journal. Now that the subscription has closed, I can have no motive in withholding from my readers and contributors the record of an event which I feel confident will be as gratifying to them as to myself: the 'Zoologist' belongs to my contributors far more than to myself: its unparalleled value as 'a repertory of facts' is of their creation: my reward is their reward, my triumph their triumph. The annals of journalism do not afford a second instance of such entire unity of purpose and cordiality of feeling as exists between the contributors to the 'Zoologist' and its nominal manager.

"It only remains, gentlemen, that I subscribe myself,

"Most gratefully and faithfully yours,

"EDWARD NEWMAN.

"7, York Grove, Peckham,
March 25, 1861."

*Buck-shooting in the Korea.*—Forming one side of the pleasant harbour of Chusan, in the Peninsula of Korea, is a long high island, familiarly known by us under the name of Deer Island, although its proper appellation is Tsi-kiung-tau. On this island there is a species of deer, a kind of Moschus, the size of a sheep, the male of which is without antlers, and the mouth armed with very long, sharp-edged, curved, canine teeth in the upper jaw. They keep very close under cover, and when driven from the shelter of the dense underwood they bound wildly along, and may then be shot like hares. The lower part of their haunt is shared by half-wild horses, which go in large troops, snorting, prancing and neighing, or suddenly halting, and having a good long stare at the intruders on their domain. Here are level grassy plains, where there are ponds with teal, ducks, frogs and water-beetles; where the mountain-springs form little trickling rivulets, sometimes heard murmuring in subterranean channels under your feet; where you find the Centaurea and the bird's-foot trefoil, the willow, the Iris and the pink; where the humble-bees wander, droning over the tops of the flowers; where I capture three or four species of Apoderus, one with an egregious long neck; where I beat Balaninus from the young oaks, and a Cryptorhynchus from the Eleagnus bushes; where Melasoma is common on the willows, and two species of Euchlora on the trailing Smilax; and where the Apollo butterfly and the swallow-tail sun their gorgeous wings. There are a few rude huts, with perchance a solitary woman, in the universal white Korean garments, may be seen pounding millet near the low door-way, while the husband smokes his pipe on the threshold. Higher up you come to huge stones and masses of rock, all gray and green and yellow with lichens, and with Eleagnus bushes growing up between them. From this you gradually make your toilsome way to Wilford's Rest, where our weary botanist reposed awhile after gaining the summit of the island. Here, among stubborn thorny Smilax and dwarf oak, and great loose stones, forming a short dense scrub, are the peculiar fastnesses of the deer. Without dogs, you would imagine, they were quite unapproachable. However that may be, let me record, with a proud satisfaction, that no less than nine deer fell before the ardour, skill and patience of my messmates. Sutherland, untiring and sagacious, slays two fat bucks, after toiling and moiling all the livelong day, and now gazes on their lifeless forms with a smile of grim satisfaction; a beetle-hunting Doctor, in a quiet bosky dell, is startled by loud shouts from the hill-side high up among the Smilax vines and oak scrub, and Warren is seen wildly flourishing a bloody knife, shouting in triumph, for has he not brought down his deer and cut its throat; down a crooked stony path, panting under the carcase of a fine buck, Wilford advances, staggering but elated; while Schuckburgh comes jauntily in, a young doe slung across his shoulders, and flings it down as if he had been accustomed to that sort of thing from infancy.—*Arthur Adams.*

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*Golden Eagle nesting in Scotland.*—You express a doubt (Zool. 7394) as to the golden eagle breeding in Britain. From 1844 to 1847 I had the shooting over the Lochalsh, a large district in the west of Ross-shire. During that time I had as many as four old birds shot by one of the keepers. These birds were all shot in the spring, and in one instance one of them was killed off the nest, in which there were two eggs. These eggs I sent to the Norwich Museum, and they are probably there now.—*E. C. Buxton; Daresbury Hall, Warrington, March* 30, 1861.

## *Brief Notes on the Birds of New Zealand.*

### By J. B. Ellman, Esq.

It is a long time since I had the pleasure of writing anything for the 'Zoologist.' Since then I have been residing in New Zealand, and, as opportunity offered, have jotted down various results of my rambles. It will be observed that the distance of the islands from any northern or southern continent precludes much migration. The climate is temperate — colder in summer and warmer in winter than England. I have never seen ice on the lakes, or snow near the coast. Our birds are not musical; daybreak and sunset alone give forth the notes of our songsters. A minute description of each species being unsuited to these pages I have only given partial ones of such species as are closely allied to others, or require particular notice. The native names are given after the English; where no author is mentioned I am responsible for the Latin name. All the species are common unless otherwise stated.

## RAPTORES.

### Fam. Falconidæ.

*Common Brown Hawk* (Kahu or Kahu papango), Falco harpe, *Forster*. Becomes brown by age, the young being much spotted with white. Irides dark brown.

*White or Goldeneyed Hawk* (Kahu or Kahu korakorako), Falco aurioculus. In August, 1854, I was duck shooting, when a shadow crossed my path. Looking up I saw a hawk, apparently with white under plumage; deeming it an interesting variety of the common brown hawk I shot it. I have since obtained several specimens. Its chief distinguishing characteristics are as follows. Irides bright yellow. Under plumage pure cream-colour in adult birds, spotted with rufous when young; the spots disappear by age. Cry very loud, resembling that of a child in pain.

*Little Falcon* (Karearea or Kaiaia), Falco brunnea, *Gould*. A very fearless bird, rather larger than a female merlin, with a similar plumage; will attack men if the nest is approached.

### Fam. Strigidæ.

*Common Owl* (Ruru or Koukou), Strix fulva, *Forster*. Very similar to your little owl. All night calls "kou-kou," a sound resembling the words "more pork!" by which name it is commonly known among the settlers.

*Little Owl* (Ruruwekau), Strix parvissima. A very scarce bird, not larger than a starling. The head is very large. I have never obtained a specimen, but have seen it among the forests. It is an exceedingly shy bird.

## INSESSORES.

### Fam. MUSCICAPIDÆ.

*Fantailed Flycatcher* (Titiwaiko or Ti-wakawaka), Muscicapa ventilabrum, *Forster*. Has a habit of spreading its white tail, like a fan, hence its name.

*Largeheaded Tit* (Miro-miro), Muscicapa macrocephala, *Latham*. Inhabits forests.

*Brown Tit* (Miro-miro), Muscicapa melanura, *Dieffenbach*. Closely allied to the preceding. Habit similar. Tail white.

### Fam. MERULIDÆ.

*Thrush* (Koropio or Piopio), Turnagra crassirostris, *Gray*. Commoner in winter than in summer in forests in the north Island. Probably many go south to breed.

### Fam. LUSCINIDÆ.

*Stonechat* (Miro-miro), Muscicapa albifrons, *Gray*. Habits identical with the English species.

*Robin* (Katoitoi or Pitoitoi), Muscicapa longipes, *Lesson*. Rather larger than the English species. It is almost impossible to stop anywhere without one of these pretty creatures coming to you.

*Reed Wren* (Kotata or Matata), Sphenæacus punctatus, *Gray*. Very short wings; cannot fly far. Long pointed tail. Creeps among fern and reeds, occasionally coming to the top to whistle a single note. At other times it utters a curious noise, similar to that made by pressing the tongue against the teeth, and imitating the call of a hen to her chickens.

*Yellowbreasted Tit* (Miro-miro), Muscicapa minutus, *Forster*. Inhabits forests.

*Whitebreasted Tit* (Toitoi), Muscicapa albopectus. Inhabits forests.

*Whiteheaded Tit* (Popokotea), Certhiparus urostigma, *Forster*. Inhabits forests.

*Ashcoloured Wren* (Riroriro), Certhiparus cinerea.

*Bartailed Wren* (Horirerire), Certhiparus maculicaudus, *Lesson*. Rather larger than the preceding species, from which it may always be distinguished by a circular white spot at the tip of each tail-feather. Said by the natives to be a bird of passage from the Polynesian Islands. I do not think such is the case.

### Fam. ALAUDIDÆ.

*Lark* (Hioi, Whioi or Pi-oioi), Alauda Novæ-Zealandiæ, *Latham.*

### Fam. CORVIDÆ.

*Crow* (Kokako), Callaeas cinerea, *Latham.* Found only in forests.

### Fam. STURNIDÆ.

*Redbacked Thrush* (Tieki, Tierawaki), Sturnus carunculatus, *Forster.* A very noisy bird. Inhabits forests. Has a flesh-coloured wattle under the eye. Plumage jet black, with the back and wing-coverts red.

### Fam. CERTHIDÆ.

*Goldfinch* (Pihipihi), Acanthisitta citrina, *Latham.* Gregarious. Very abundant in some forests.

*Mountain Wren* (Piwauwau), Acanthisitta tenuirostris, *Gray.* Only found on the snowy ranges.

*Longlegged Wren* (Kakaruai), Acanthisitta longipes, *Latham.* Inhabits forests.

*Spotted Wren* (Mako), Acanthisitta punctata, *Gray.* Inhabits forests.

### Fam. UPUPIDÆ.

*Huia* (Huia), Neomorpha Gouldii, *Gray.* A very scarce bird. Only found on the summits of the mountains in the neighbourhood of the Wairarapa, near Wellington. A very tame bird. Colour jet-black. Wings short. Tail curved, like the blackcock's, barred with white at the tip. Has a pink wattle on each cheek. Legs yellow, and very long. The male has a straight bill; the female a curved one and much longer. It is fast becoming extinct.

### Fam. MELIPHAGIDÆ.

*Mocking Bird* (Tui-koko), Meliphaga Novæ-Zealandiæ, *Gray.* Black, with two white feathers protruding from the chin, hence called the parson bird. Is easily taught to talk, and is very fond of imitating any sound. Excellent eating.

*Yellowwinged Finch* (Kotihe, Tihe or Ihi), Meliphaga cincta, *Gray.* Inhabits forests.

*Bell Bird* (Kopara, Kokomako), Anthornis melanura. At daybreak and sunset these birds assemble for a period of half an hour, and simultaneously give forth enchanting music, consisting simply of four descending notes—E, B, B, E,—commencing on the E above the staff, the third note being an octave below the second.

### Fam. HALCYONIDÆ.

*Kingfisher* (Kotare), Halcyon vagans, *Gray*. Builds in holes of trees. Cries like a wryneck.

### Fam. PSITTACIDÆ.

*Parrot* (Kaka), Nestor meridionalis. Excellent eating.

*Redheaded Parroquet* (Kakariki), Platycercus Novæ-Zealandiæ, *Forster*. Excellent eating.

*Goldenheaded Parroquet* (Potarakina), Platycerus auriceps, *Vigors*. Closely allied to the preceding. Abundant in forests.

*Great Night Parrot* (Kakapo), Strigops habroptilus, *Gray*. A very rare bird. As large as a fowl. Only appears by night. Cannot fly. Lives in holes in the ground. Feeds on leaves and berries. Most numerous in the Southern mountains of the middle Island. It was much prized for food, and used to be abundant.

### Fam. CUCULIDÆ.

*Cuckoo* (Koekoea), Cuculus taitensis, *Latham*. A summer visitor from the Polynesian Islands. Habits similar to the English species.

*Goldenspotted Cuckoo* (Pipiwarauroa), Cuculus lucidus, *Latham*. Another extremely beautiful visitor from the Polynesian Islands. Green and gold bands and spots on the breast and belly. Arrives about the 10th of October, and leaves the 1st of March. Cries like a wryneck. Considered a sacred bird by the natives.

### Fam. HIRUNDINIDÆ.

Hitherto I have never seen or heard of a species of this tribe. It is singular that, being in the same parallel of latitude as Southern Australia, where swallows are plentiful, and not being much over one thousand miles in a straight line from that continent, with heavy westerly gales blowing direct to our coasts, the species so common there should not have found their way to us.

### Fam. COLUMBIDÆ.

*Pigeon* (Kereru, Kuku or Kukupa), Columba Novæ-Zealandiæ, *Latham*. Delicate eating. In July and August it feeds on the leaves of a bitter shrub — the Kowhai — which imparts a bitter taste to the flesh.

## RASORES.

### Fam. TETRAONIDÆ.

*Quail* (Moho koreke), Coturnix Novæ-Zealandiæ, *Buffon*. Very scarce now in the North Island. Abundant in the middle.

### Fam. STRUTHIONIDÆ.

A few centuries ago there were several species in this division; most of these are now extinct. Of the gigantic Struthionidæ bones of many species occur all over the Islands. Feathers have also been found, and fragments of egg shells; also one perfect egg, taken out of the grave of a native, in 1856. It is believed by many natives that none of the species are entirely extinct. They give tolerably minute descriptions of many species, but it is impossible from their descriptions to define the number formerly existing. Professor Owen has detected fourteen distinct species from the various bones which have from time to time been sent to England. Wherever the bones of the larger species are found there exists about a quart of pebbles, used doubtless to assist digestion. I can only give the native names and descriptions of a few extinct species. All these birds were hunted by the natives for food.

*Moa*. The largest species stood sixteen feet high. Colour red-brown. Fed on leaves of forest trees; their legs were too long to allow them to eat off the ground. Bones full of marrow.

*Kiwi Papa Whenua*. Seven feet high. One of the last birds to disappear. There are still living men who have hunted it.

*Tokoeka*. Three feet high. Bright red. Inhabited only the snowy mountains in the neighbourhood of Otago.

*Po-waka-i*. Ten feet high. Lived on carrion as well as plants. Peculiar to the middle Island.

*Kiwi Mokemoke*. Three feet high. A solitary ash-coloured bird, with a long curved bill. These are all the traditions of the preceding five birds to be relied on. It is highly probable that this species and other smaller ones yet exist among the wild unexplored mountain ranges of the middle Island.

*Great Apteryx* (Kiwi Parure), Apteryx major. Inhabits forests and mountains. A night bird. By imitating its call it is attracted and then caught with dogs. It is also caught by lighting a large fire, which is sure to attract them. Native report says that this and the next described species do not sit on their eggs, but cover them up with leaves, the decomposition and fermentation of which, at the expiration of one year, hatches the egg. Probably this report is mere fiction, and the bird always covers its egg on leaving the nest. This species only lays one egg. Its legs are very powerful, sufficiciently so to break the leg of a dog. The egg is white and three inches in length.

*Little Apteryx* (Kiwi Hoihoi). Smaller than the preceding. My dogs have caught this bird. Lays two eggs. Habits similar to the preceding.

## GRALLATORES.

### Fam. CHARADRIDÆ.

*Redwinged Plover* (Tuturiwatu), Charadrius xanthocheilus, *Gray.* Has a broad red band on the breast. Beak tawny, black tip. Resembles the English ringed plover.

*Blackringed Plover* (Tuturiwatu), Charadrius atricinctus. Has, I believe, hitherto been called C. torquatulus, a name equally applicable to the preceding species. Smaller than the preceding. One narrow black band on the breast. Beak black, twice as long as the preceding species.

*Spotted Plover* (Pohoera), Charadrius obscurus, *Latham.* Closely allied to the English turnstone.

*Dotterell* (Pohoera), Charadrius frontalis (?), *Lesson.* Identical with the English species (?). Never seen inland.

*Black Oystercatcher* (Torea-nui), Hæmatopus niger. Jet-black. Beak and legs red. Rather scarce.

*Pied Oystercatcher* (Torea-nui), Hæmatopus picatus, *Vigors.* Both these species are much smaller than the English, which they resemble in habits.

### Fam. ARDEIDÆ.

*White Heron* (Koutuku), Ardea alba. A beautiful snow-white bird. Very abundant in the island of Ruapuke; scarcer in northern parts. Builds in high trees. Gregarious.

*Blue Heron* (Matuku-wai-tai), Ardea cinerea. Scarce. Only seen among rocks on the coast.

*Bittern* (Matuku hurepo), Botaurus melanotus, *Cuvier.*

*Little Bittern?* A missionary, a good naturalist, once assured me he shot a very diminutive bittern, resembling our own little bittern, but in travelling he lost the skin. I have no knowledge of such a bird.

*Spoonbill* (Koutuku ngutu-papa), Ardea latirostrum. Very scarce. I only know of a single specimen shot at "Castle Point" on the east coast of the North Island.

### Fam. SCOLOPACIDÆ.

*Godwit* (Kohikuhikuaka), Gallinago punctata. Very similar to the English bartailed godwit. Gregarious. Plentiful on the coast.

*Avocet* (Piwari), Avocetta Novæ-Zealandiæ. Local. Confined to the southern portions of the Island.

*Black Stilt* (Torea-iti), Himantopus niger. Jet-black.

*Pied Stilt* (Tore-aiti), Himantopus picatus. Of various proportions of black and white.

*White Stilt* (Torea-iti, Tutumata), Himantopus albus. This species is scarce, smaller than the preceding, and is not subject to varieties of plumage. The head, neck, back, breast and belly are pure white. The wings are of an indigo-black. Both sexes are similar in plumage. All three species are the torment of duck shooters, by their incessant cry on approaching them. As soon as they call "peet peet" every duck takes wing. They are very bold, and will continue to fly round the shooter so long as he is in their neighbourhood.

### Fam. RALLIDÆ.

*Notornis* (Takahe), Notornis Mantellii. Discovered by my friend Mr. Mantell. A very large bird, nearly as large as a turkey. Is only found in the middle Island.

*Woodhen* (Weka), Rallus australis, *Latham*. Inhabits wild countries, especially creeks. Resembles in plumage and size a hen pheasant minus the tail. Bill curved like that of the whimbrel. Has a loud whistle, by imitating which it is attracted; also attracted by fire. A night bird. Delicate eating. Wingless, but runs very fast. Mixes with fowls, and cross breeds have occurred.

*Redlegged Rail* (Moho pereru), Rallus rufopes.

*Greenlegged Rail* (Moho patatai), Rallus punctatus. Spotted on the back.

*Ferruginous Rail* (Moho katatai), Rallus assimilis. Scarcer than the two preceding. All three are about the size of the spotted crake, which they resemble. Mostly found in swamps. They have a peculiarly jarring note, resembling the noise of the catch of a windlass when it is rapidly revolving.

*Little Black Rail* (Totoriwai), Rallus minor. Very scarce. Jet-black. Irides yellow.

*Great Black Rail* (Moho), Rallus niger. This bird was formerly very abundant, and the most highly esteemed of the genus for food.

*Great Red Rail* (Moho kura), Rallus rufus. This species was as large as a moorhen, and much prized for food. It is of a mottled red and brown. Confined to the mountains.

*Great Brown Rail* (Moho weka), Rallus fuscus). Larger than the last species. Almost extinct. Dark brown. Irides black. Inhabits forests.

*Great Spotted Rail* (Moho pu), Rallus strepitans. Spotted all over with red, and white spots on a brown ground. Makes a peculiar booming noise, resembling distant thunder, hence its name, "pu;" for this reason I have called it strepitans. Almost extinct. In former years many more species of this tribe were abundant, but the introduction of cats has greatly thinned them. Cats seem to have a remarkable preference for the Rallidæ above all other birds. A few years will see most of the above described birds, except the redlegged, greenlegged and ferruginous rails, extinct. The habits of these species, which dwell in swamps, will protect them from extermination.

*Moorhen* (Pukeko, Pakura), Porphyrio melanotus, *Temminck.* The flesh has a bitter flavour.

## NATATORES.

### Fam. ANATIDÆ.

*Paradise Duck* (Putangitangi), Anser variegata, *Latham.* A very handsome goose. Easily tamed. Is becoming numerous.

*Gray Duck* (Parera, Tahora), Anas superciliosa, *Latham.* The common wild duck. Delicate flavour.

*Black Duck* (Papango), Anas atra. A small black species, with a white bar across the wing. Irides golden. Confined to fresh water.

*Shoveller* (Pakau-kuku, Rangi-tauharuru), Anas rhynchotes, *Latham.* Resembles the English species. Confined to the coast. Makes a great noise with its wings on rising.

*Lapped Bill Duck* (Whio), Anas malacorhynchus, *Forster.* A lead-coloured duck, with a soft fleshy lappet at the extremity of its bill, which is white. Is very stupid and easily snared or killed with a stone. Confined to mountain streams.

*Teal* (Tetewai), Anas fusca. Rather larger than the English species.

*Mountain Teal* (Parera), Anas mediterranea. Only found on lagoons inland.

### Fam. COLYMBIDÆ.

*Little Grebe* (Weiweia), Podiceps rufopectus, *Gray.* Resembles the English species.

*Crested Grebe?* Found on lagoons in the middle Island. Unknown to me.

### Fam. ALCADÆ.

*King Penguin.* I have seen this species off the coast of Stewart's Island; I believe it breeds there.

*Little Penguin* (Korora), Spheniocus minor, *Temminck.*

*Great Penguin* (Ho-i-ho), Eudyptes antipodes. Chiefly confined to the middle Island.

### Fam. PELECANIDÆ.

*Gannet* (Taiko, Takapu), Jula australis, *Gould.* Resembles the English species.

*Crested Cormorant* (Kauau pari), Pelecanus cirrhatus, *Gray.* Ash colour, spotted with black. Belly white. Legs yellow. Male has a fine crest. Peculiar to the coast. Breeds in cliffs.

*Little Black Cormorant* (Kauau pango), Pelecanus carboides, *Gould.*

*Whitethroated Cormorant* (Kauau), Pelecanus varius, *Forster.* Easily distinguished by the white throat, breast and belly.

*Whitethighed Cormorant* (Kauau tua-whenua), Pelecanus flavirostris? *Forster.* A very large cormorant, with a white spot on each thigh. Greenish black. Beak yellow. Breeds inland.

*Great Green Cormorant* (Kauau nui), Pelecanus major. A dark green cormorant, the largest of the tribe. Breeds inland.

### Fam. LARIDÆ.

*Common Gull* (Karoro), Lestris antarcticus. This bird seizes mussels with its beak, and flies to a height of thirty or forty feet, letting them fall on the beach, repeating this process until the shell is broken. If it finds a mussel with open shell in shallow water, it drops a pebble in to prevent the shell from closing. White. Wings black.

*Brown Gull* (Karoro), Lestris fuscus, *Latham.* Distinguished from the young of the preceding by its white irides.

*Little Gull* (Tara punga), Lestris scopulinus, *Forster.*

### Fam. STERNIDÆ.

*Great Tern* (Tara kakao), Sterna major. Expanse of wings four feet. Primaries tipped with black. A very noisy bird. Confined to the coast.

*Common Tern* (Tara nui), Sterna vulgaris. Identical with the English species. Beak and legs red.

*Blacklegged Tern* (Tara nui), Sterna atripes. Distinguished from the preceding by its black beak and legs.

*Little Tern* (Tara paku), Sterna parva. One half the size of the common tern, but exactly similar in plumage.

*Gray Tern* (Tara), Sterna cinerea. Often found inland as well as on the coast.

### Fam. PROCELLARIDÆ.

*Mutton Bird* (Titi), Procellaria tridactyla, *Forster*. Breeds in the mountains. Is often caught at dusk, on a dark foggy evening, by lighting a fire on a conspicuous spot, towards which it is sure to fly on its return from sea. It is then killed with a stick.

*Cape Pigeon*, Procellaria punctata. Very common on the coast of the middle and south Island.

*Whale Bird*, Procellaria ——— ?

*Storm Petrel* (Oi), Procellaria æquinoctionalis, *Latham*.

*Great White Albatross* (Torva), Procellaria ——— ?

*Brown Albatross* (Torva pango), Procellaria ——— ?

*Ashcoloured Petrel* (Titi), Procellaria ——— ?

*Grayheaded Black Petrel* (Titi makawe), Procellaria ——— ?

All the above species, and many others with which I have very little acquaintance, breed in great numbers on the Snares Islands, south of Stewart's Island; some also breed on the mainland, but I have not paid sufficient attention to them to accurately define them. I believe that there are yet perhaps fifty species of undescribed birds, and I hope that the above brief notes may be the means of drawing the attention of observers, who are more competent and more at liberty than I am, to the Ornithology of New Zealand.

The above notes give the following analysis :—

| | |
|---|---|
| Raptores | 5 |
| Insessores | 31 |
| Rasores | 3 (living) |
| Grallatores | 27 |
| Natatores | 34 |
| Total | 100 |

J. B. ELLMAN.

Lewes, March 8, 1861.

## *Collected Observations on the Nests and Eggs of British Birds.*

By Edward Newman.

(Continued from p. 7449.)

HAWFINCH, *Fringilla coccothraustes.*

*Situation.* "The situation of the nest is various; but it is most commonly placed in an old scrubby whitethorn bush, often in a very exposed situation; they also frequently build on the horizontal arms of large oaks, the heads of pollard hornbeams, in hollies, and occasionally in fir trees in plantations; the elevation at which the nest is placed varying from five to twenty-five or thirty feet."—*Mr. Doubleday.*

*Materials.* "The most correct description of the nest which I have seen is in Latham's 'Synopsis.' It is there said to be composed of the dead twigs of oak, honeysuckle, &c., intermixed with pieces of gray lichens; the quantity of this last material varies much in different nests, but it is never absent; in some it is only very sparingly placed among the twigs; in others the greater part of the nest is composed of it; the lining consists of fine roots and a little hair. The whole fabric is very loosely put together, and it requires considerable care to remove it from its situation uninjured."—*Mr. Doubleday.*

*Eggs*, 4—6. "The eggs vary in number from four to six, and are of a pale olive-green, spotted with black, and irregularly streaked with dusky gray. Some specimens are far less marked than others, and I have seen some of a uniform pale green."—*Mr. Doubleday.*

Mr. Selby's account of the nest and eggs of this bird appears to me entirely erroneous.

GOLDFINCH, *Fringilla carduelis.*

*Situation.* Gardens and orchards, seeming to prefer cultivated to uncultivated districts; often in evergreens, sometimes in roses and other trees trained against a house.

*Materials.* Lichen, moss, a little hay and wool most compactly interwoven, and lined with hair and the seed-down of the willow.

*Eggs*, 4, 5. White, tinged with blue, spotted with raw sienna at the larger end.

SISKIN, *Fringilla spinus.*

*Situation.* In furze bushes, about three feet from the ground: the eggs were taken, hatched under a canary and reared.—*Mr. Yarrell.* Mr. Newton (Zool. 3707) gives a most interesting account of siskins breeding in confinement. The nest is rarely found in Britain.

*Materials.* Green moss, dried grass, small twigs, rabbits' down and sometimes feathers. "I have a siskin's nest, taken in Scotland, that is built of fine grass and mosses, not one feather, a few small dead fir twigs outside, and lined with fine grass and a very little wool."—*Mr. Bond.*

*Eggs*, 4, 5. "Of a bluish ground-colour, some being spotted and others marked with rust-colour, either in well-defined dark spots about the larger end or cloudily dispersed over the whole surface."—*Mr. Newton.*

LINNET, ***Fringilla cannabina.***

*Situation.* In whitethorn, blackthorn or furze bushes; rarely in trees.

*Materials.* Moss, bents and wool, lined with hair and feathers. "I don't think I ever saw a nest without fine fibrous roots in it: I have two nests built almost entirely of fibrous roots; one has only a small quantity of wool and the other a small quantity of horsehair in addition."—*Mr. Bond.*

*Eggs*, 4—6. White, tinged with blue and speckled with purple-red.

LESSER REDPOLE, ***Fringilla linaria.***

*Situation.* In the alders or willows and sallows which so often fringe the streams and ponds in mountain or lake districts. Mr. Bury informs us (Zool. 643) that two nests of this little bird have been found in the Isle of Wight.

*Materials.* Moss and hay outside, lined with the down of the catkins of the willow. "As smoothly lined with the beautiful white catkins of the willow as a box of jewels with the finest cotton-wool."—*Mr. Hewitson* (Zool. 3027).

*Eggs*, 4, 5. Very pale blue-green, speckled about the larger end with orange-red. "The eggs are sometimes so blue as to retain much of the colour after they are blown."—*Mr. Hewitson* (Zool. 3027).

TWITE, ***Fringilla montium.***

*Situation.* "Amid the tops of the tallest heath in the mountainous districts of England and Scotland."

*Materials.* "Composed of dry grass and heather, lined with wool, fibres of root, and the finer parts of the heath."—*Mr. Selby.*

*Eggs*, 4, 5. "Of a pale bluish green colour, spotted with pale orange-brown."—*Mr. Selby.*

BULLFINCH, ***Loxia pyrrhula.***

*Situation.* In very thick garden hedges and in thick bushes in woods. Although the bullfinch is so common a cage-bird I have known but of a single instance of its breeding in confinement: I am indebted to Mr. Gurney Barclay for a narrative of this interesting circumstance: "In 1837 a pair of these birds, which had been caged some months, were observed eagerly picking up moss and hair in the room in which they were accustomed to fly loose, and on their being furnished with materials speedily constructed a nest, chiefly of fibrous roots, similar to that of a bullfinch in a state of nature. The female laid five eggs, from which three young birds were hatched."—*Zool.* 453. The bullfinch sits on her eggs with such steadfastness that she will allow herself to be handled without leaving the nest: instances of this have often been recorded. I cite one: "A female while sitting once allowed me to pass my finger several times down her head and back without taking wing. I did this on two or three occasions; once in presence of other persons: the bird would open her beak in a threatening manner, and submit open-mouthed to my caresses."—*Rev. C. A. Bury* (Zool. 643).

*Materials.* Twigs, fibrous roots; a loose, carelessly constructed nest. I have had many opportunities of watching the whole process of nidification and incubation in this bird, and have found the female sit so close that you may stroke her back with a finger without inducing her to leave the nest. I never found the male engaged in incubation.

*Eggs*, 4, 5. White, tinged with blue, and spotted with raw sienna-brown.

CROSSBILL, *Loxia curvirostra.*

*Situation.* Fir trees, near Hampton Lodge, Surrey.

*Materials.* "The nest is rather small in proportion to the size of the bird, being only four inches and a half across the top, outside measure, where it is widest, and the central cavity but three inches in diameter. The outside is strengthened with a few slender twigs of fir, then a layer of coarse dry grass, lined with finer grass and a few long hairs. It is lodged close to the central or main stem of a Scotch fir, about thirty inches below its highest point, at the base of the shoots; here the nest is supported underneath by five or six ascending lateral branches of the fir, which so entirely conceal it that it can scarcely have been perceptible from the ground, and the occasional visits of the parent birds probably betrayed their retreat."—*Mr. Long, of Hampton Lodge, near Farnham.* "Four or five years ago the Scotch firs in the Holt Forest were cut down to allow more room for the growth of the young oaks: when the trees were thrown four nests of the crossbill were found in their topmost forks."—*Mr. Lewcock* (Zool. 189).

*Eggs*, 4, 5. "The eggs measure seven-eighths of an inch in length and five-eighths of an inch in breadth; the colour white, slightly tinged with pale skim-milk blue, and sparingly speckled with red."—*Mr. Long.*

STARLING, *Sturnus vulgaris.*

*Situation.* In hollow trees, holes in the walls of ruins, sea cliffs, and more commonly in houses, entering a hole under the eaves. They have bred in the house I inhabit for many years.

*Materials.* Sticks, straw, hay, roots.

*Eggs*, 4. Delicate pale blue, unspotted.

I have frequently known three old birds to one nest.

CHOUGH, *Pyrrhocorax graculus.*

*Situation.* In the holes of ruins and near the sea, and in sea-cliffs and sea-caves.

*Materials.* Sticks, lined with a great quantity of wool and hair.

*Eggs*, 5, 6. Dirty white, spotted and blotched, more especially at the larger end, with raw sienna-brown and ash-colour.

RAVEN, *Corvus corax.*

*Situation.* Tops of lofty trees or crevices of sea-cliffs and other inaccessible rocks.

*Materials.* Sticks of various sizes, lined with wool and hair.

*Eggs*, 5, 6. Gray-green, spotted and blotched with smoky brown.

CROW, *Corvus corone.*

*Situation.* Tops of trees in woods.

*Materials.* Sticks, the larger outside, the smaller inside; these latter plastered with mud, clay or cowdung; lined with wool and horsehair.

*Eggs*, 4, 5. Gray-green, blotched and spotted with smoky brown. "I have eggs, both of the crow and rook, of a clear blue, without spots."—*Mr. Bond.*

HOODED CROW, *Corvus cornix.*

*Situation.* In rocks and sea-cliffs in Scotland; sometimes in trees. "The hooded crow breeds in the islands of Loch Maddie in great abundance, building a nest very similar to that of the carrion crow, and laying four or five eggs rather smaller than the carrion crow's, and of a greenish blue colour, freckled with brown."—*Sir William Milner* (Zool. 2015).

*Materials.* Sticks, heather, wool.

*Eggs*, 4, 5. Gray-green, blotched and spotted with smoky brown.

ROOK, *Corvus frugilegus.*

*Situation.* The tops of tall trees, generally in the neighbourhood of country mansions: this bird is gregarious: rooks build very early in the year, often in the winter: it is recorded (Zool. 868) that a pair laid in November; the female sat and the eggs were hatched about the 18th; the young ones died of cold. Mr. Norman relates that two pairs of rooks built nests and reared their young on the top of a house in Hull. Rooks have been induced to form a colony or rookery in a spot where it was desired, by taking the eggs out of a magpie's nest, and substituting those of a rook: the young rooks were brought up by the magpie, and next year established themselves in the same locality: Colonel Newman relates this interesting fact (Zool. 3327).

*Materials.* Large sticks, hay, straw, &c.

*Eggs*, 4, 5. Gray-green, spotted and blotched with smoky brown.

*Note.*—I am unable to define any difference in colour between the eggs of the raven, crow, hooded crow and rook.

JACKDAW, *Corvus monedula.*

*Situation.* Towers of churches, ruins, rocks, chalk-pits, hollow trees; sometimes in holes in the ground, especially rabbits' burrows.

*Materials.* Sticks, straw, large feathers.

*Eggs*, 4—8. Pale green-blue, spotted with dingy brown; the spots confluent at the larger end.

MAGPIE, *Corvus pica.*

*Situation.* In trees, generally tall ones, but sometimes in low bushes—even in gooseberry bushes.

*Materials.* The outer and upper portion of the nest, which is almost spherical and domed, is composed of thorny sticks and brambles; smaller and thornless sticks are inside these, and then follows a lining of clay, which in its turn is covered with fibrous roots and hay. There is a circular hole on the side, through which the birds enter: the incubating bird has its head pointing towards this hole. A popular belief gives a second hole to the magpie's nest, opposite the first; the object of this is supposed to be to allow the bird's long tail to pass out: I cannot corroborate this view.

*Eggs*, 6—8. Yellow-gray, speckled with yellow-brown.

JAY, *Corvus glandarius.*

*Situation.* In the thickest parts of woods.

*Materials.* Sticks, roots; small fibrous roots for lining.

*Eggs*, 5, 6. Pale greenish blue, very thickly sprinkled with minute brown spots, often confluent on the larger end, where there are generally three or four irregular black streaks.

GREEN WOODPECKER, *Picus viridis.*

*Situation.* In the trunk of a tree, particularly the aspen and black poplar, in a hole which is frequently made by the bird itself, and is generally very round and of great depth.

*Materials.* None, except the particles of wood chipped off by the birds in the process of boring.

*Eggs,* 3, 4. White, with a slight tinge of blue. Mr. Newton (Zool. 2229) mentions eggs of the green woodpecker "spotted and blotched with reddish brown and tawny yellow." "These markings must have been accidental stains, as the eggs of the whole genus are white."—*Mr. Doubleday.*

SPOTTED WOODPECKER, *Picus major.*

*Situation.* In the trunk of a tree: the bird invariably plasters up with clay the hole in the tree in which the nest is built, only leaving a round hole just large enough to permit the passing of the bird.

*Materials.* The particles of wood chipped off by the bird.

*Eggs,* 4, 5. White, beautifully and delicately tinged with blue.

LESSER SPOTTED WOODPECKER, *Picus minor.*

*Situation.* A hole in the trunk of a tree, so small at the entrance that a larger bird cannot enter; chiefly in Herefordshire, Worcestershire and Gloucestershire.

*Materials.* Comminuted decayed wood.

*Eggs,* 5—7. White, tinged with pink.

WRYNECK, *Yunx torquilla.*

*Situation.* Holes in the trunks of trees; the hole sometimes lined with moss and feathers.

*Materials.* Comminuted decayed wood.

*Eggs,* 5—7. Pure white.

CREEPER, *Certhia familiaris.*

*Situation.* The hole of a tree.

*Materials.* Fine hay: Mr. Selby says also the inner bark of trees.

*Eggs,* 6. White, speckled with red-brown.

WREN, *Troglodytes europæus.*

*Situation.* Under the thatch of stables, outhouses, summer-houses, on the face of rocks, either exposed or clothed with ivy, on the ivy-clothed trunks of trees: the nest is completely domed, and has a small entrance-hole near the top. This little bird has credit for building a number of supplementary nests, for no other purpose except to roost in: it is certain a great many more nests are built than are required for purposes of incubation: such supplementary nests are always without lining, and are commonly called "cock's nests," and Mr. Duncan asserts (Zool. 382) that they are built by the male birds.

*Materials.* Principally moss and lichens, lined with feathers: always of the same colour as the substance to which it is attached.

*Eggs,* 6. White, tinged with yellow, and speckled at the larger end with red-brown.

NUTHATCH, *Sitta europæa.*

*Situation.* The hole of a decaying tree, especially apple trees: this bird invariably plasters up the hole with clay, leaving a small round opening.

*Materials.* The dried dead leaves of oak, apple, elm, &c., very carelessly arranged.

*Eggs,* 5—7. Pure white, spotted with red-brown, and not easily distinguished from those of the great titmouse, but they are generally larger. "During incubation the female sits very close, and it is almost impossible to drive her from the nest; she defends it to the last extremity, striking with her beak and wings, and making at the same time a hissing noise."—*Mr. Selby.*

CUCKOO, *Cuculus canorus.*

*Situation and Materials.* The cuckoo makes no nest, but lays its eggs in the nests of other birds, particularly of the pied wagtail, meadow pipit, yellowhammer and hedgesparrow. See a most interesting account of a young cuckoo by Col. Newman: it was found in a hedgesparrow's nest, removed with the nest into a wicker cage, and there tended by the hedgesparrows (Zool. 3424).

*Egg,* 1, in a nest. Reddish gray, with a darker zone formed of very numerous confluent spots at the largest part; very variable.

KINGFISHER, *Alcedo hispida.*

*Situation.* A hole in a river-bank, generally three or four feet above the usual surface of the water: the hole excavated by the sand martin is often adopted.

*Materials.* The bones of fishes and nothing else (see Zool. 3578).

*Eggs,* 6, 7. Nearly round, white and shining: when quite fresh from the nest and unblown the yelk shows through the shell, and gives a beautiful salmon-colour to the egg.

SWALLOW, *Hirundo rustica.*

*Situation.* In chimneys and under eaves of houses, outhouses, churches and stables. Some very excellent observers have stated that swallows do not commonly build in chimneys (see Zool. 147, 354, &c.); but this is certainly the general rule: how they can approve of such a smoky atmosphere is a problem I am unable to solve.

*Materials.* Mud or clay mixed with straw and hay, and lined with feathers: a rather large, loosely-built nest, always open at top: it has none of the neatness for which the nest of the following species is so remarkable.

*Eggs*, 4, 5. White speckled with brown, generally forming a distinct zone at the larger end; the only British species of the family that has speckled eggs.

MARTIN, *Hirundo urbica.*

*Situation.* Under eaves of houses, string-courses, and other projections in churches, arches of bridges, upper angles of windows, face of chalk-pits, rocks and sea-cliffs.

*Materials.* Mud, neatly welded together, and forming a compact domicile, enclosed on all sides excepting a circular hole just large enough to admit the passage of the birds within the mud habitation; internally lined with straw, hay and feathers.

*Eggs*, 5, 6. White, tinged with pink, unspotted.

SAND MARTIN, *Hirundo riparia.*

*Situation.* At the extremity of deep holes, excavated by the bird itself, in sand-banks.

*Materials.* Hay, straw, feathers.

*Eggs*, 4, 5. White, unspotted.

SWIFT, *Cypselus apus.*

*Situation.* Holes in the towers and steeples of churches, sometimes under the eaves of inhabited houses.

*Materials.* Hay, straw, feathers collected while descending. "These materials are cemented together, and the inside of the nest is plastered with a viscid substance furnished by glands peculiar to certain birds of this genus."—*Mr. Selby.* I have no knowledge of the substance or glands alluded to by this eminent ornithologist.

*Eggs*, 2. White, unspotted.

NIGHTJAR, *Caprimulgus europæus.*

*Situation.* On the ground, on sandy heaths, particularly under shelter of the common brachen (*Eupteris aquilina*).

*Materials.* None.

*Eggs*, 2. Gray, spotted and marbled with dark brown and gray, very glossy. "The female, when sitting upon her eggs or young, squats so close and flat, besides remaining motionless, and her colours harmonize so well with the surrounding surface of the ground, that she is not readily seen, unless you happen to catch sight of her large lustrous dark eye; indeed, when the young are hatched she will almost let you tread on her before she attempts to rise."—*Zool.* 3654.

This bird is the cuckoo of those juvenile naturalists who write and speak of the cuckoo incubating her own eggs and rearing her own young: I believe Mr. Selby was the first author who explained away these strange mis-statements.

Ring Dove, *Columba Palumbus.*

*Situation.* In fir trees, yew trees and ivy-clothed trees, also in ivy covering the surface of rocks. "Hundreds of nests are built in Epping Forest every year, in the branches of the pollard hornbeams and in oaks; and also in the pollard elms in hedge-rows."—*Mr. Doubleday.* "I have found many nests in the New Forest in old whitethorns."—*Mr. Bond.* "A ring dove had fixed her nest in a low furze-bush growing upon the slope of a considerable clay bank. The twigs with which the nest was formed were in some places curiously interwoven with the branches of the bush."—*Mr. Duncan.* Mr. Edward relates (Zool. 2644) that he found a ring dove's nest on the ground.

*Materials.* Sticks and twigs laid together in a loose and careful manner. I have often seen the eggs through the bottom of the nest.

*Eggs*, 2, white. The young of this species, and perhaps of the other doves, are fed with half-digested matter ejected from the crops of the parents. "In my morning rambles, last spring, I discovered a nest of a ring dove in a young Scotch fir, containing three eggs, one of them much less than the other two."—*Mr. Walmsley* (Zool. 222).

Stock Dove, *Columba Ænas.*

*Situation.* Cavities in the trunks of trees in Richmond Park, and elsewhere in the South and East of England, as Hertfordshire, Norfolk, Suffolk, Essex, Kent, Sussex and Surrey: also in rabbit-burrows. "The stock dove occupies the deserted rabbit-burrows upon warrens; it places its pair of eggs about a yard from the entrance, generally upon the bare sand, sometimes using a small quantity of dried roots, &c., barely sufficient to keep the eggs from the ground: besides such situations on the heaths, it nestles under thick furze-bushes which are impervious to rain, in consequence of the sheep and rabbits eating off the young and tender shoots as they grow; the birds always preferring those bushes that have a small opening, made by the rabbits, near the ground."—*Mr. Salmon.*

*Materials.* Sticks and roots.

*Eggs*, 2. White and shining.

Rock Dove, *Columba Livia.*

*Situation.* Fissures and ledges of sea-cliffs: I have observed this bird breeding at Oban in Argyleshire, in the Isle of Mull, and other places on the west coast of Ireland.

*Materials.* Sticks and heath.

*Eggs*, 2. White.

TURTLE DOVE, *Columba Turtur.*

*Situation.* In very thick woods in the south-eastern counties of England, more especially Kent.

*Materials.* Twigs and sticks carelessly laid together.

*Eggs*, 2. White, very small compared with those of the ring dove and stock dove.

PHEASANT, *Phasianus colchicus.*

*Situation.* On the ground, amidst coarse grass and weeds, or in the scrub on the outskirts of woods: this bird is polygamous. Mr. Newton mentions (Zool. 4070) an instance of a pheasant occupying the dray of a squirrel in a Scotch fir: she hatched but did not rear her young; they were found dead in the nest.

*Materials.* Scarcely any, beyond the dried grasses among which it is placed.

*Eggs*, 8—13. Pale olive-green, unspotted.

CAPERCALLY, *Tetrao Urogallus.*

*Situation.* This bird was formerly abundant in Scotland, then became extinct, was reintroduced in 1838 on the domain of the Marquis of Breadalbane, and is now increasing.

*Materials.* Sticks and ling.

*Eggs*, 6—12. Pale red-brown, spotted and blotched with two shades of darker brown. "In 1829 I saw nine eggs of the capercally which were sent over from Norway to Lord Fife, to be hatched at Marr Lodge, Braemar. They were completely different in appearance from any other eggs of this interesting bird that have come under my notice. They were without any spots, and of a deep brown colour, with some scarcely perceptible yellow blotches."—*Rev. James Smith* (Zool. 2989). "All the eggs I have seen are exactly like those of the black grouse, except in size."—*Mr. Bond.*

BLACK GROUSE, *Tetrao Tetrix.*

*Situation.* On the ground on wild mountain heaths, particularly in wet or marshy places, where sundew is found: this bird is polygamous.

*Materials.* Ling, heath, grass; always sheltered by a tussock of coarse grass, a furze-bush or a bush of ling.

*Eggs*, 6—10. Gray, tinged with yellow-red, blotched with red-brown.

RED GROUSE, *Tetrao scoticus.*

*Situation.* On mountain wilds in Scotland, North of England, Herefordshire, South Wales and Ireland. The Herefordshire habitat, known as the Black Mountain district, although so well known to the sportsmen in the neighbourhood, seems to have escaped the notice of naturalists.

*Materials.* Ling, heath, bents, very little of either, the bird scratching a hole in which to lay her eggs. The hen bird only incubates, the cock remaining in the neighbourhood, and flying short distances before the intruder, to lead him away from the nest: as soon as the young come forth the cock and hen are equally assiduous in taking care of them.

*Eggs,* 7—13. Gray, sometimes white, blotched with umber-brown.

PTARMIGAN, *Tetrao Lagopus.*

*Situation.* On the ground on the stony mountain tops of Scotland and adjacent islands.

*Materials.* None: the hen scratches the ground, and lays her eggs in the cavity thus formed.

*Eggs,* 7—15. Pale-red brown, blotched with two shades of darker brown.

PARTRIDGE, *Perdix cinerea.*

*Situation.* On the ground, in corn fields, standing grass, among weeds, &c., throughout all arable districts.

*Materials.* Nothing more than the stems of the corn-weeds growing in such places, scratched and trampled down.

*Eggs,* 10—20. Pale yellow-brown, unspotted: they are usually hatched about Midsummer Day, not the middle of July, as stated by most authors.

REDLEGGED PARTRIDGE, *Perdix rubra.*

*Situation.* On the ground in clover and corn fields in the eastern counties, particularly Norfolk and Suffolk. Mr. Newton mentions (Zool. 4073) an instance of a bird of this species building a nest and sitting on thirteen eggs on the thatch of a stack of barley.

*Materials.* Dried leaves, in addition to the crop, whatever it may be, in which the bird chooses its site.

*Eggs,* 12—18. Yellow-gray, spotted with red-brown.

QUAIL, *Perdix Coturnix.*

*Situation.* Generally in corn fields, among green corn.

*Materials.* None, unless the trodden and scratched blades of growing corn can be thus called.

*Eggs,* 12--20. Pale yellowish brown, speckled, spotted or blotched with brown.

STONE CURLEW, *Œdicnemus crepitans.*

*Situation.* On the ground, especially in the south-eastern counties of England.

*Materials.* Sometimes a very few bents and small straws.

*Eggs*, 2, 3. Testaceous-brown, blotched, spotted and streaked with lead-colour and umber-brown: pairs of eggs have often been found in the stony fallows at Aperfield, near Cudham, in Kent.

GOLDEN PLOVER, *Charadrius pluvialis.*

*Situation.* On mountain wilds and bogs in Scotland, the North of England, and Ireland.

*Materials.* Scarcely any, a few fragments of heather and dried grasses carelessly scraped together.

*Eggs*, 4. Cream-coloured, with large blotches of umber-brown of various shapes and sizes. The young bird is covered with down of two colours: it runs as soon as hatched.

DOTTERELL, *Charadrius morinellus.*

*Situation.* Summits of mountains in the North of England, "particularly those that are densely covered with the woolly fringe-moss (*Trichostomum lanuginosum*), which indeed grows more or less profusely on nearly all the most elevated parts of this alpine district."—*Mr. Heysham.* The particular hills on which the dotterell feeds are Helvellyn, Whiteside, Whatson Dod, Saddleback, Skiddaw, Carrick Fell, Grasmoor, Robinson, Gold Scalp and Great Gavel, on the Cumberland ranges; also Hoy in Orkney, and several localities in the Orkney Islands.

*Materials.* None: "they lay their eggs in a small cavity on dry ground covered with vegetation, and generally near a moderate-sized stone or fragment of rock."—*Mr. Heysham.*

*Eggs*, 3. Dark cream-colour or olive-brown, thickly blotched with dark brown or black.

RINGED PLOVER, *Charadrius hiaticula.*

*Situation.* On the sea-coast, among gravel or on sand near high-water mark. "Sometimes also on the links or sand-hills that line the coast, or even in a corn field, if immediately adjoining the shore."—*Mr. Selby.*

*Materials.* Dried grasses, and a very small quantity of them. "Often, perhaps generally, lined, or more properly speaking paved, with small white stones, looking something like tessellated pavement; which not unfrequently remains perfect for a year or two after the young birds have left."—*Mr. Bond.*

*Eggs*, 4. Pale stone-colour, marked all over with small black and ash-coloured spots; they are invariably placed with the smaller ends together in the middle, thus occupying the least possible space. "In the spring of 1844, while staying on the Sussex coast, I found two nests of this bird, each with four eggs: I visited them at noon every day for nearly a week; I invariably found the bird on the nest, although the weather was very hot at the time. The parent bird, when disturbed, creeps along the shingle to the water's edge, and then flies a short distance, uttering its well-known cry."—*Mr. Channell* (Zool. 1202). It is said that the ringed plover exposes her eggs to the sun's rays at noon: I think the preceding quotation shows the fallacy of this assertion.

KENTISH PLOVER, *Charadrius cantianus.*

*Situation.* On sand by the sea-coast of Kent and Sussex.

*Materials.* It makes no nest, but lays its eggs in a depression of the sand, and about the banks of shells which abound in some localities on the beach.

*Eggs*, 4. Pale testaceous-brown, spotted and streaked with black.

LAPWING, *Vanellus cristatus.*

*Situation.* On all waste grounds, whether upland or low marshes.

*Materials.* It makes a depression on the surface, lined with straws and bents.

*Eggs*, 4. Dark olive-brown, blotched with black-brown. May be bought in any quantities in the London markets, to which they are brought as articles of luxury. The eggs of rarer birds often occur amongst them, but it requires a perfect knowledge of eggs to fix on the species to which such accidentally-obtained eggs belong.

OYSTERCATCHER, *Hæmatopus ostralegus.*

*Situation.* On the bare ground on our sea-coasts, especially of Lincolnshire.

*Materials.* A few bents and small stones regularly arranged.

*Eggs*, 3, 4. Stone-colour, blotched with dark brown and gray: sometimes streaked: they are invariably placed with the smaller ends in the middle.

HERON, *Ardea cinerea.*

*Situation.* The tops of high trees, almost invariably in societies called heronries, in one station only (in Pembrokeshire), on cliffs facing the sea.

*Materials.* Sticks in large quantities, the interior lined with wool and sometimes rags.

*Eggs*, 4, 5. Pale greenish brown.

BITTERN, *Ardea stellaris.*

*Situation.* On the ground in marshy places, always near the water's edge, amongst dense masses and clusters of reeds and flags.

*Materials.* A few sticks, with abundance of dead reeds, flag-leaves and Carices.

*Eggs*, 4, 5. Pale greenish brown.

CURLEW, *Numenius arquata.*

*Situation.* On the ground, generally sheltered by heath, ling, or clumps of Carex or rush, in a cavity scraped out by the parent.

*Materials.* Dried heather, rushes or Carices.

*Eggs*, 4, the points meeting in the centre, pale olive-green, blotched with brown of two shades. The young, which run as soon as hatched, are covered with down, and do not possess the long curved beak of the parents.

WHIMBREL, *Numenius phæopus.*

*Situation.* On the ground in exposed heathy districts, on the Grampians, in Scotland, in the Orkney Islands, Shetland Islands, &c.

*Materials.* Dried heather and grass.

*Eggs*, 4. Dark olive-green, blotched with dark umber-brown.

REDSHANK, *Totanus calidris.*

*Situation.* On the summit of a tussock of grass or Carex, or on the ground in moist meadows.

*Materials.* Fine dried grass, in small quantities.

*Eggs*, 4. "Egg pale yellowish straw-colour, the dark spots often forming a zone at the larger end."—*Mr. Doubleday.*

COMMON SANDPIPER, *Totanus hypoleucos.*

*Situation.* "It breeds upon the banks of rivers or lakes, taking care to make its nest beyond the reach of the usual floods; and frequently, should a corn field approach the edge of the water, it will retire within it. The immediate site of the nest is generally under a projecting tuft of grass or rush, where it scrapes rather a deep hole in the ground."—*Mr. Selby.*

*Materials.* The deep hole mentioned by Mr. Selby is lined with fine dried grass and leaves.

*Eggs*, 4. "The eggs are four in number, and not five, as stated by some authors; they are of a cream-yellow colour, with numerous spots of dark brown upon the surface, and others of a lighter hue appearing as it were underneath the outer shell."—*Mr. Selby.*

This elegant little bird is called the snipe and summer snipe, and is the species to which all the stories of snipes settling on rails, gates,

&c., may be unhesitatingly referred. This very excusable mistake has occasioned a rather acrimonious and most amusing controversy in that excellent sporting newspaper 'The Field.'

GREENSHANK, *Totanus glottis.*

*Situation.* "I once found a nest of this bird in the island of Harris; it was at a considerable distance from the water."—*Mr. Macgillivray.*

*Materials.* * * * "and consisted of a few fragments of heath and grass, placed in a hollow cavity scraped in the turf in an exposed place: the nest in fact resembled that of the golden plover, the curlew or the lapwing."—*Mr. Macgillivray.*

*Eggs*, 4. "The eggs, placed with their narrow ends together, were four in number, pyriform, larger than those of the lapwing and smaller than those of the golden plover, equally pointed with the latter, but proportionally broader and more rounded at the larger end than either. The dimensions of one of them were two inches exactly, by one inch and three-eighths: the ground-colour is a very pale yellowish green, sprinkled all over with irregular spots of dark brown, intermixed with blotches of light purplish gray, the spots and especially the blotches more numerous at the larger end."—*Mr. Macgillivray.* "The egg is larger than that of the redshank by six lines in length and four in breadth: it is of a pale greenish white colour, blotched and spotted with ferruginous and dull red, chiefly at the larger end." — *Sir Wm. Milner* (Zool. 2016). Sir W. M. E. Milner states (Zool. 2230) that he subsequently had three eggs sent him from the same locality, like the first in size but considerably more coloured, being nearly the same colour as the peewit's, but very different in shape, being pyriform. "Very variable in ground-colour; some are cream-coloured."—*Mr. Bond.*

AVOCET, *Recurvirostra Avocetta.*

*Situation.* Col. Montagu says that this beautiful bird breeds in the fens of Lincolnshire, and also in Romney Marsh: whatever may have been the case formerly, it certainly does so no longer.

*Materials.* None are mentioned.

*Eggs*, 2, 3. "It lays two eggs, about the size of those of a pigeon; white, tinged with green and marked with large black spots." — *Col. Montagu.* "The nest is said to be made in a small hole in the drier parts of extensive marshes: the eggs are said to be only two in number, of a clay-coloured brown, spotted and speckled with black, about two inches in length, by one inch and a half in breadth."—*Mr.*

*Yarrell.* "Colonel Montagu never could have seen the eggs of the avocet; they are as large as those of the peewit."—*Mr. Bond.*

BLACKTAILED GODWIT, *Limosa melanura.*

*Situation.* A few pairs of this bird breed in the fenny districts of Lincolnshire, Cambridgeshire and Norfolk, making their nest in thick herbage, and always near water.

*Materials.* "The nest is composed of dry grass and other vegetables, and is concealed among coarse herbage of the swamps and low meadows."—*Mr. Yarrell.*

*Eggs,* 4. Deep olive-green colour, faintly blotched with spots of a darker shade.

RUFF. *Machetes pugnax.*

*Situation.* "The nest is usually formed upon a lump in moist swampy places, surrounded by coarse grass."—*Col. Montagu.*

*Materials.* None brought to the spot, the coarse grass growing there being the only substance used.

*Eggs,* 4. "The eggs are, as usual with its congeners, four in number; these are so nearly similar to those of the snipe and redshank, both of which breed in the same wet places, and make similar nests, that some experience is required to discriminate them: they are, however, superior in size to the former, and are known from the latter by the ground being of a greenish hue instead of rufous-white; but individuals assimilate so nearly to each other as not to be distinguished, especially as the dusky and brown spots and blotches are similar."—*Col. Montagu.*

WOODCOCK, *Scolopax Rusticola.*

*Situation.* In underwood at the foot of a tree: the bird generally scrapes out a slight hole in the ground, and without much attempt at concealment.

*Materials.* Dead leaves and dried fronds of the common brake (*Eupteris aquilina*).

*Eggs,* 4. Yellow-white, blotched with pale chestnut-brown.

The woodcock frequently but not habitually nests in this country: this occurrence seems accidental and exceptional: the eggs are very rarely found, the young more frequently: the young ones run as soon as hatched, and the old birds are most assiduous in caring for them, often transporting them from place to place with their feet. For instances of the woodcock breeding in England almost every volume of the 'Zoologist' may be consulted.

COMMON SNIPE, *Scolopax Gallinago.*

*Situation.* On the ground on the elevated moors of the North of

England and highlands of Scotland, and usually under a tuft of sedge or grass.

*Materials.* The snipe makes a slight depression in the earth, and lines it with withered grass and dried heather.

*Eggs*, 3, 4. Gray, tinged with yellow or olive-green, and blotched with umber-brown of two shades: they are invariably placed with the small ends together in the middle. The great mass of snipes frequenting this country in the winter leave us in the spring and breed in the North of Europe. "The eggs of this bird are very variable in ground-colour; sometimes dark olive-brown, sometimes dark cream or stone-colour."—*Mr. Bond.*

DUNLIN, *Tringa variabilis.*

*Situation.* On the sea-beach, among shingle at the mouth of rivers in Scotland; sometimes also in salt-marshes, and very rarely in mountain bogs.

*Materials.* A few straws or bents.

*Eggs*, 4. Of an olive-green or green-gray colour, blotched all over with umber-brown. "Very variable in ground-colour; pale olive-green and cream-colour of various shades."—*Mr. Bond.*

LANDRAIL, *Gallinula Crex.*

*Situation.* On the ground in meadows and underwood, sometimes in fields of standing corn, generally making a slight cavity.

*Materials.* Grass, sometimes leaves.

*Eggs*, 10—15. Dingy white, tinged with rosy pink, and freckled and spotted with red-brown: the young are covered with silky brown down, and run as soon as hatched.

SPOTTED CRAKE, *Gallinula porzana.*

*Situation.* On the ground in bogs and marshes, generally in the water, that is, so placed that the water permeates the lower part of the nest.

*Materials.* Flags, sedges, reeds, rushes, sometimes Potamogetons, often forming a very large mass, apparently disproportioned to the size of the bird, but having a cup-shaped depression in the middle, dry, and neatly lined with the same materials only finer.

*Eggs*, 8—10. Gray, tinged with pink, and spotted with umber-brown of two shades. "The young take the water as soon as hatched."—*Col. Montagu.* "They are of a dark bottle-green colour." —*Mr. Bond.*

MOORHEN, *Gallinula chloropus.*

*Situation.* I have taken great interest in observing the nesting places of this common and familiar bird, which lives with us, like the pheasant, in a semi-domestic state, seeming to prefer the companionship of man with all its dangers. I have seen the moorhen's nest high up in a Spruce fir, resting on lateral branches, sometimes close to the bole, and sometimes so near the end as to swing with every breeze; then I have found it on the long horizontal boughs of willows that actually dipped the water and floated on the surface; again on the top of a pollard willow; again on the summit of a tussock of Carex or Aira cæspitosa, and very often indeed among the sedges on the banks of streams and ponds.

*Materials.* The nest is formed of a huge mass of flags and reeds matted and woven and sodden together.

*Eggs*, 8—10. Pale testaceous-brown, spotted with testaceous-brown and umber-brown. When the bird leaves the nest she covers the eggs with flags and reeds: the young, which are covered with black hairy down, take to the water immediately on leaving the egg-shell.

WATER RAIL, *Rallus aquaticus.*

*Situation.* Under thick cover in osier-beds, and swamps in which alders grow, more especially in the South of England.

*Materials.* Sedges and flags in considerable quantities.

*Eggs*, 6—9. "Of a spotless white and very smooth, rather larger than those of a blackbird; the shape a short oval, with both ends nearly alike."—*Col. Montagu.* "Cream-coloured white, with small specks of ash-gray and reddish brown."—*Mr. Yarrell.* Temminck says the eggs vary from 10 to 12 in number, and are yellow-white, spotted with red-brown. Mr. Hewitson figures something answering this description. "The eggs are well known. I have seen the nest *in situ* at Whittlesea Mere: Hewitson's figure is quite correct: I think Montagu's nest must have belonged to some other bird. I have seen scores of eggs—not a pure white one among them—always creamy white, with more or less small reddish dots and spots. I have the young, which is dark bottle-green, similar to the young of the moorhen, spotted crake and Baillon's crake: I have the very young of all these species now before me: not one is really black."—*Mr. Bond.*

COOT, *Fulica atra.*

*Situation.* In marshes and ponds.

*Materials.* Decaying reeds, flags, sedges and rushes. "I have examined many of their nests: they are large, and, at first sight, apparently clumsy, but are amazingly strong and compactly put together; they are sometimes built on a tuft of rushes, but more commonly among reeds: some are supported by those that lie prostrate in the water, whilst others have their foundations at the bottom, and are raised till they become from six to twelve inches above its surface sometimes in a depth of one and a half to two feet of water."—*Mr. Hewitson.* The nests are frequently washed from their foundations by floods, and then float on the surface of the water, and are driven by the wind to the shore; the hen bird, if incubating at the time, exhibits no disapprobation of this change of position, but continues assiduously to perform her parental duties.

*Eggs*, 7—10. Gray, tinged with green, speckled and spotted with brown, the spots very few, less numerous and darker than the speckles. "The young, when excluded, are clothed with a patch of black down, tipped with gray; having the base of the beak and forehead covered with small scarlet appendages, and the occiput surrounded with a circle of yellow hairy down."—*Mr. Selby.* "I think the young of the coot has more red and yellow on the neck and back than in Mr. Selby's description: the body is sooty black."—*Mr. Bond.*

REDNECKED PHALAROPE, *Phalaropus hyperboreus.*

*Situation.* Breeds in the Orkney Islands, and always near the sea. "The nests were placed in small tufts of grass growing close to the edge of the loch: they were formed of dried grass, and were about the size of that of a titlark, but much deeper. The eggs are considerably smaller than those of the dunlin, and are beautifully spotted all over with brown."—*Mr. Salmon.*

*Materials.* Grasses and sedges.

*Eggs*, 4. Olive-green, with appropriate black spots.

GRAYLAG GOOSE, *Anser ferus.*

*Situation.* "It breeds amongst rushes and other coarse herbage, making a large nest of vegetable matter, and laying from six to twelve eggs of sullied white."—*Mr. Selby.* "On Loch Maddie we saw a few pairs of the graylag goose, and found one egg which is rather smaller than that of the bean goose, and more pointed at the smaller end."—*Sir William Milner* (Zool. 2015).

BEAN GOOSE, *Anser Segetum.*

*Situation.* "This bird, which I take to be the common wild goose, certainly breeds in the western islands of Scotland, and also in the Highland lochs of Scotland, always in the vicinity of water." Sir W. M. E. Milner has favoured me with the following note:—"Upon Loch Laighall, in Sutherlandshire, we found several pairs of the bean goose breeding, and procured their eggs, which are smaller than those of the common goose, but of a similar shape and colour. They generally lay from six to eight eggs, but are so constantly robbed that they are leaving Loch Laighall, and are betaking themselves to the islands on the smaller lakes, which from their situation are inaccessible to man, as no boat can be brought to them. After their nests have been robbed they never lay again."—*Zool.* 2014.

*Materials.* Sedges, flags, rushes, grasses, generally in large masses.

*Eggs*, 8—12. White.

COMMON SHIELDRAKE, *Anas tadorna.*

*Situation.* This bird occasionally, perhaps frequently, breeds in this country, selecting those parts of the sea-shore which, in the North of England and in Scotland, are so frequently honeycombed by rabbits; these excavations they enlarge, and often place their nest ten or twelve feet from the entrance.

*Materials.* Dried flags, sedges, reeds, &c., for the exterior; the lining always composed of down plucked from their own bodies.

*Eggs*, 10—12. Of a roundish oblong form, having a very smooth shell and being cream-coloured.

SHOVELLER, *Anas clypeata.*

*Situation.* This bird is said to breed in Norfolk, Lincolnshire, Cambridgeshire and Scotland: it always selects that part of marshes farthest removed from the observation of man.

*Materials.* Flags, sedges, reeds.

*Eggs*, 8—12. White, manifestly tinged with green.

WILD DUCK, *Anas Boschas.*

*Situation.* In some spot in the marshes rather drier and more elevated than the surrounding flat, but sufficiently near to the water for the hen bird to lead her ducklings to the water immediately on being hatched. There are, however, many exceptions to this usual site of the duck's nest, and we occasionally find them building on pollard willows, or occupying a deserted crow's nest in a tree, and even on church-towers: the problem "how does the duck, breeding in such situations, convey its ducklings to the water?" has been discussed in the pages of the 'Zoologist' with much eagerness and a good deal of talent: it has been contended that she carries them one by one in her feet, in her beak, under her beak, &c.; and several writers have insisted, certainly contrary to fact, that these elevated nests are always so placed that the ducklings, when hatched, may fall at once into the water: the subject is one which still requires the most careful observation: as a simple fact this habit of wild ducks is perfectly familiar to the inhabitants of Lapland, "in which country cylinders of wood stopped at both ends, and having a hole in the side, are elevated on poles, purposely to entice wild ducks to build in them: these birds are not slow to avail themselves of this accommodation, and the Laplanders thus reap a harvest of duck's eggs. The hawk-owl, however, often dispossesses the duck, appropriates the cylinders, and pays a felon's penalty to the owner."—*Linnæus.* These observations refer perhaps more especially to the goldeneye; but several species have the same or a similar taste in nidification.

TEAL, *Anas Crecca.*

*Situation.* Marshes in Scotland and the North of England, very rarely in the South, particularly selecting sites in which rushes are abundant.

*Materials.* Large quantities of dried or decaying flags, sedges and other water plants, lined with feathers.

*Eggs*, 8—10. White, without any tinge of blue.

EIDER DUCK, *Anas mollissima.*

*Situation.* On the ground on the coast of Northumberland, the Fern Islands, Coquet Islands, Western Islands of Scotland, &c. Mr. Selby, who has repeatedly visited the Fern Islands for the purpose of studying these birds, gives the following account of them: — "About April they are seen assembling in small groups along the shores of the mainland, from whence they cross over to the Islands in May, soon after which the females begin to prepare their nests, and they usually commence laying about the 20th of that month. The males, as soon as this takes place and incubation commences, leave the females, and again spread themselves along the shore, in companies of four or five together."

*Materials.* "The nest is composed of dried grasses mixed with a quantity of the smaller Algæ, and as incubation proceeds (and which lasts for a month) a lining of down, plucked by the bird from her own body, is added. This addition is made daily, and at last becomes so considerable a mass as to envelope and entirely conceal the eggs."—*Mr. Selby.*

*Eggs*, 5. "The usual number of eggs is five, of a pale asparagus-green colour, of an oblong shape, and not much less than those of a goose. * * The young, as soon as hatched, are conducted to the water, which in some instances must be effected by the parent conveying them in her bill, as I have often seen the nest in such situations as to preclude the possibility of their arriving at it in any other way, and indeed the keeper of one of the lighthouses assured me that he had seen the bird engaged in this interesting duty."—*Mr. Selby.*

REDBREASTED MERGANSER, *Mergus Serrator.*

*Situation.* On the ground on the borders of lakes, or on lake-islands in Scotland, especially Loch Awe: the nest is a few yards above the highest water line, "frequently," says Mr. Selby, "beside a large stone covered with brambles and coarse herbage, or under the shelter of some thick bush."

*Materials.* Dried grasses and rushes, and fibrous roots with abundance of the bird's feathers and down, the last increased in quantity as incubation advances.

*Eggs*, 7—11. White or cream-colour, tinged with brown.

GOOSANDER, *Mergus Merganser.*

*Situation.* Mr. John Macgillivray says that the goosander breeds in the outer Hebrides, on the borders of lakes, and sometimes on the sea-coast: he mentions Loch Maddie, in North Uist. Mr. Low also says it breeds in the Orkneys.

*Materials.* "The nest is constructed of a mass of grass, roots and other materials, mixed and lined with down."—*Mr. Selby.*

*Eggs*, 12—15. Cream-coloured, equally blunt at both ends.

GREAT CRESTED GREBE (or LOON), *Podiceps cristatus.*

*Situation.* Floating on the water of fresh-water lakes or ponds, especially amongst reeds, in the eastern and northern counties of England, particularly Norfolk, Lincolnshire and Cheshire.

*Materials.* It collects an enormous quantity of flags, reeds, and Mr. Selby says the stems of the water-lily.

*Eggs*, 3, 4. White, tinged with green.

EARED GREBE, *Podiceps auritus.*

*Situation.* Floating on the surface of water in the fens of Lincolnshire.

*Materials.* Flags and other aquatic plants.

*Eggs*, 4, 5. Little or nothing is known of the breeding of this bird in Britain. Col. Montagu mentions the foregoing facts.

LITTLE GREBE, *Podiceps minor.*

*Situation.* Floating on the surface of the water of ponds.

*Materials.* Decayed flags, reeds, Potamogetons, &c., forming immense masses.

*Eggs*, 5, 6. At first white, by degrees becoming dingy and dirty, as if stained by the decaying flags: the female, on leaving the nest, covers the eggs with flags, &c., to conceal them.

REDTHROATED DIVER, *Colymbus septentrionalis.*

*Situation.* Mr. Low says that it breeds in the Orkney Islands, in a lake among the hills of the Isle of Hoy, and that the nest is so situated that the bird can step from the nest into the water. "Between Tongue and Altrehara, on the 20th May, we procured a fine specimen of the redthroated diver on a small pool near the road-side. A single egg was deposited close to the water's edge, and on skinning the bird a second egg was found ready for extrusion."—*Sir William Milner* (Zool. 2014).

*Materials.* It is formed of moss and the stems of aquatic plants.

*Eggs*, 2. Olive-green, with black spots.

GUILLEMOT, *Uria troile.*

*Situation.* On the ledges of sea-cliffs in a great number of stations all around our coasts. I may particularly mention Beachy Head. "Here the egg-collectors frequently obtain twelve or fourteen dozen of guillemot's eggs of a morning, and sell them readily at sixpence each. These men are lowered down the cliff by means of a derrick, which is simply a thick pole, with a wheel in one end of it for the rope to run over, and protruding about two feet from the edge of the cliff: through the other end of the pole a hole is bored, and through this an iron bar is driven firmly into the ground to keep it steady."—*Zool.* 1193. See also 'Letters of Rusticus.'

*Materials.* None: the bird makes no attempt at nest-building, but lays its eggs on the bare rock.

*Egg* 1. Very large, and disproportionately large at one end, the other end tapering; ground-colour bright green or dirty white, blotched with black or black-brown. The young, when hatched, are thickly covered with down, dark above and light beneath: they remain on the rock for some weeks.

BRUNNICH'S GUILLEMOT, *Uria Brunnichii.*

*Situation.* On sea-cliffs in the Island of Soa, one of the St. Kilda group.

*Materials.* None.

*Egg*, 1. "Bright green, not spotted or blotched, but streaked."—*Sir W. Milner.*

RINGED GUILLEMOT, *Uria lacrymans.*

*Situation.* Sea-cliffs at Borrera, one of the St. Kilda group.

*Materials.* None.

*Egg*, 1. "Bright green, covered with irregular lines of brownish black."—*Sir W. Milner.* The late Mr. John Wolley, whose untimely loss all ornithologists sincerely deplore, expressed (Zool. 3477) a very strong opinion that this bird is not distinct from the common guillemot; and I know of no one more capable of forming a sound judgment on such a point.

**Black Guillemot**, *Uria grylle*.

*Situation.* On sea-cliffs in Orkney, Shetland and St. Kilda; also, in very small numbers, in the Isle of May, in the Firth of Forth.

*Materials.* None whatever, its egg being laid on the bare rock.

*Egg* 1. Gray, speckled with black and ashy gray.

**Puffin**, *Mormon fratercula*.

*Situation.* It burrows in the ground, or adopts as its own the burrows of rabbits, in the immediate neighbourhood of the sea. Pembleton Island, near Anglesea, Isle of Man, Isle of Wight, &c.: it also frequently breeds in fissures of sea-cliffs: see especially, on this point, the 'Letters of Rusticus,' and a paper 'On Sea-fowls Breeding in Moray Firth,' by the Rev. James Smith (Zool. 2905). Mr. Smith says that the fissures in which these birds breed are very narrow and frequently long. "They extend a considerable way into the rock, and are generally horizontal, but occasionally vertical. Especial care seems to be taken by the bird against all such among them as may be liable to be reached by the waves, even when the tide is at the very highest. There is in this case but little appearance of a nest; but, when incubation is well advanced, a few grasses will be usually observed intermixed with a sprinkling of feathers from the bird. In such fissures as these the nest can only be reached by means of a stick. The bird sits very closely and determinedly upon it; will not be induced to quit it except by force, and with its singularly constructed and formidable beak bites most severely in its defence."

*Materials.* None, the egg being placed on the bare earth at the extremity of the burrow.

*Egg*, 1. Gray, with a dingy tinge and a few brown specks.

**Razorbill**, *Alca torda*.

*Situation.* On sea-cliffs; sometimes in holes.

*Materials.* None.

*Egg*, 1. Generally gray, blotched with black or brown.

**Cormorant**, *Carbo cormoranus*.

*Situation.* The ledges of sea-cliffs, Freshwater Cliff, Isle of Wight, and many other localities.

*Materials.* Sticks and dead sea-weeds.

*Eggs*, 5. Whitish, tinged with green. The young are born blind and naked, but soon acquire a clothing of black down: they are six weeks before they can leave the nest. I have seen them in all stages on the face of the cliff at Freshwater by lying down and looking over from the summit: the smell from these birds, while nesting, is exceedingly offensive.

SHAG, *Carbo cristatus.*

*Situation.* Ledges and apertures on the face of sea-cliffs. I have never seen it, and believe it is confined to a few localities in the islands north-west of Scotland.

*Materials.* "The nest is formed of a considerable quantity of sea-weed, lined with the finer species and dried grass."—*Mr. Hewitson.*

*Eggs*, 4, 5. "The eggs, like those of the cormorant, are outwardly of a soft chalky substance, which is easily scraped off, leaving a hard greenish shell beneath. When fresh-laid they are white, but soon become daubed and stained all over, like the eggs of the grebe, by the materials of which the nest is formed."—*Mr. Hewitson.*

GANNET, *Sula bassana.*

*Situation.* On rocks, as Ailsa Craig in the Firth of Clyde, the Island of St. Kilda, the Bass Rock in the Firth of Forth, Souliskerry near the Orkneys, and the Skelig Islands on the Irish coast. "Upon the precipitous rocks of these islands they breed in innumerable multitudes, occuping all the ledges and summits wherever they can find sufficient space for a nest." — *Mr. Selby.* The gannets nesting on Borrera, one of the St. Kilda group, are so numerous as to give it quite the appearance of a chalk-cliff.

*Materials.* Principally sea-weeds, but often various kinds of rubbish found floating on the ocean.

*Egg*, 1. White, but it soon becomes dirty with being trodden on. "The young, when hatched, are naked, their skin smooth and bluish black, but covered in a few days with a white down, which growing rapidly soon becomes very thick, giving them in this state the appearance of large powder-puffs or balls of cotton."—*Mr. Selby.* See also Colonel Montagu's account.

SANDWICH TERN, *Sterna cantiaca.*

*Situation.* On the ground in the Fern and Coquet Islands, on the coast of Northumberland. "Here a station is selected apart from the other species, generally on a higher site; and the nests are so close to each other as to render it difficult to cross the ground without breaking the eggs or injuring the unfledged young." — *Mr. Selby.* The bird makes a shallow cavity among the sea campion, which abounds on these islands.

*Materials.* None, the eggs being laid on the bare ground.

*Eggs*, 3, 4. "Of a cream or wood-brown colour, blotched with dark brown and black, and with other spots of a lighter shade appearing as it were beneath the shell. The common varieties of them are either with fewer spots and blotches upon a white ground, or of a deep oil-green, with spots of a darker shade."—*Mr. Selby.*

Roseate Tern, *Sterna Dougallii.*

*Situation.* On the ground in the Fern Islands of the coast of Northumberland, and the islands of the Firth of Clyde.

*Materials.* None, the bird only scraping a hole in the sand.

*Eggs*, 3, 4. Cream-colour or pale umber-brown, blotched with two shades of darker brown.

Common Tern, *Sterna Hirundo.*

*Situation.* On the ground in the islands of the Firth of Clyde, Solway Firth and the Western Islands.

*Materials.* None: it scrapes a hole in the sand above high-water mark.

*Eggs*, 2, 3. Various in the ground-colour, being olive-green, umber-brown, and even cream-coloured, always blotched with two shades of brown.

Arctic Tern, *Sterna arctica.*

*Situation.* On the bare ground in the Fern Islands, on the coast of Northumberland. "The colony occupies a large spot on the islet selected, and the eggs are placed so near to each other as to render it difficult to traverse the site without crushing some of them." —*Mr. Selby.*

*Materials.* None, the bird only scraping a hole in the sand.

*Eggs*, 2, 3. The ground-colour olive-green, with darker blotches.

Lesser Tern, *Sterna minuta.*

*Situation.* On the bare ground in several distant parts of the kingdom; on the coast of Lincolnshire, especially about Skegness; on the coast of Northumberland, and on both sides of the Firth of Forth.

*Materials.* None, the bird merely scraping a hole in the sand.

*Eggs*, 2, 3. "Yellowish stone-colour, spotted with black-brown and gray, the spots thickest at the larger end: they do not vary much."—*Mr. Doubleday.*

Black Tern, *Sterna nigra.*

*Situation.* In sedgy places in the fens of Cambridgeshire, Lincolnshire, and Romney Marsh on the coast of Kent.

*Materials.* "About the middle of May this species prepares a nest of flags or broad grass in the most marshy places, upon a tuft just above the water." — *Col. Montagu.* Often built on the broad leaves of the water-lily, according to Temminck; and if so, it must float like the nests of the grebes.

*Eggs*, 4. Olive-brown, blotched with umber-brown.

**Blackheaded Gull,** ***Larus ridibundus.***

*Situation.* In tussocks of sedge at Palisbourne in Northumberland, and in the fens of Lincolnshire.

*Materials.* "The gulls trample down the grass on the tops of the tussocks, and thus form a place on which they deposit their eggs, and sit isolated each on his own little island, about a foot or more above the surface of the water or swamp. Thus raised from the surface, they are seen at a considerable distance, and easily observe the approach of an enemy."—*Col. Montagu.*

*Eggs,* 3, 4. Pale olive-green or pale umber-brown, blotched with black-brown or dark gray.

**Kittiwake,** ***Larus tridactylus.***

*Situation.* On sea-cliffs at Flamborough Head in Yorkshire, the Fern Islands on the coast of Northumberland, Fowls Heugh near Stonehaven, the Bass Rock and the Isle of May in the Firth of Forth, Ailsa Craig in the Firth of Clyde, and many other similar situations. At Fowls Heugh they are said to breed in vast numbers, but never in the Isle of Wight, as Mr. Yarrell supposed. "At Buraforth, a fishing station belonging to Mr. Edmonston," one of their breeding stations, "the ledges of the rocks were to a great extent whitened with their numbers, as much as they would have been by a fall of snow."—*Mr. Hewitson.*

*Materials.* The birds collect a little dry sea-weed and dry grass, and arrange it very carelessly on narrow ledges on the face of the cliffs.

*Eggs,* 2. Gray, blotched with darker gray and black-brown.

**Common Gull,** ***Larus canus.***

*Situation.* "At St. Abb's Head, a bold and rocky headland of Berwickshire, these birds are very numerous in the breeding-season, and occupy the whole face of the cliff."—*Mr. Selby.*

*Materials.* "The nest is formed of sea-weed, dry grass, &c."—*Mr. Selby.*

*Eggs,* 2, 3. "The eggs, two and sometimes three in number, are of a pale oil-green or a yellowish white colour, blotched irregularly with blackish brown and gray."—*Mr. Selby.*

**Lesser Blackbacked Gull,** ***Larus fuscus.***

*Situation.* On the ground or in hollows or depressions of the rocks on the coast of Northumberland and St. Kilda.

*Materials.* Dried grass, sometimes intermixed with sea-weed, generally comprising altogether a considerable mass.

*Eggs*, 3. Olive-brown or light testaceous-brown, thickly spotted and blotched with brown of two shades.

HERRING GULL, *Larus argentatus.*

*Situation.* On sea-cliffs and rocky islands near the coast of Wales, St. David's Headland, the Isle of Wight, St. Kilda, &c.

*Materials.* Dry grasses and fern (*Eupteris aquilina*).

*Eggs*, 3. "The fishermen told us that these gulls will lay three eggs again, if the first three are taken, and three more when the second three are taken, but no more than this, nine being the whole stock for one year."—*Rusticus.* They are olive-brown, with black-brown spots. At Freshwater these gulls "are for ever scanning the face of the cliff to catch a glimpse of an unprotected egg of the guillemot: directly a gull has found one he charges point-blank at the small end, using his beak as a lance: the huge egg, thus pierced, sticks on his beak, and he flies away as though he were carrying a great pear in front of his head: in this way he sucks out all the goodness while on the wing, and drops the shell when empty. These shells, with a great hole at one end, may often be found upon the downs above." —*Rusticus.* "This bird is easily domesticated, and breeds in confinement."—*Zool.* 1385.

GREAT BLACKBACKED GULL, *Larus marinus.*

*Situation.* On the ground on the Steep Holmes and Lundy Island in the Bristol Channel, Souliskerry in the Orkneys, the Bass Island in the Firth of Forth, St. Kilda, &c.

*Materials.* Sea-weed and dry grass in large quantities.

*Eggs*, 3. Dark olive-green, blotched with black-brown.

COMMON SKUA, *Lestris catarractes.*

*Situation.* On the ground on wild heaths in the Shetland Islands, breeding in companies on the hills called Foula and Ronas, on the main island; and also on the small island of Unst.

*Materials.* Dried grass and dry ling.

*Eggs*, 2. Dark olive-green or olive-brown, blotched with black-brown, intermixed with a few small whitish spots.

RICHARDSON'S SKUA, *Lestris Richardsoni.*

*Situation.* On the ground on wild heaths, both in the Orkney and Shetland Islands, breeding in companies.

*Materials.* Dried grass and moss.

*Eggs*, 2. Dark olive-green, with irregular blotches of brown.

FULMAR PETREL, *Procellaria glacialis.*

*Situation.* Sea-cliffs in the St. Kilda Islands.

*Materials.* Generally a small quantity of thrift and dried grass.

*Egg*, 1. White. Sir Wm. Milner in the 'Zoologist,' Mr. Hewitson in his 'Oology,' and Mr. Macgillivray in the 'Edinburgh New Philosophical Journal,' have severally given some account of the nesting of the fulmar. I quote from Mr. Macgillivray's: — "The fulmar exists in St. Kilda in almost incredible quantities, and to the natives is by far the most important production of the island. It forms one of the principal means of support to the inhabitants, who daily risk their lives in its pursuit. The fulmar breeds on the face of the highest precipices, and only such as are furnished with small grassy shelves, every spot of which, above a few inches in extent, is occupied by one or more of its nests. The nest is formed of herbage, seldom bulky, generally a mere shallow excavation in the turf, lined with dried grass and the withered tufts of the sea-pink, in which the bird deposits a single egg, of a pure white colour when clean, which is seldom the case, and varying in size from 2 inches 7 lines to 3 inches 1 line in length, by 2 inches in breadth. On the 30th June, having partially descended a nearly perpendicular precipice 600 feet in height, the whole face of which was covered with nests of the fulmar, I enjoyed an opportunity of watching the habits of this bird, and describe from personal observation. The nests had all been robbed about a month before by the natives, who esteem the eggs of this species above all others. Many of the nests contained each a young bird a day or two old at the farthest, thickly covered with long white down. The young birds were very clamorous on being handled, and vomited a quantity of clear oil, with which I sometimes observed the parent birds feeding them by disgorging it."

MANX SHEARWATER, *Puffinus Anglorum*.

*Situation*. On the ground in the Orkney Islands and Scilly Islands.

*Materials*. A little dried fern: the bird scratches a hole between two stones or in crevices of the rocks, or makes a burrow in the sand. "The egg is frequently deposited on the fine sandy soil without any preparation, though generally there is a slight accumulation of fern-leaves and old stems. They produce but one egg, which, when laid, is of the most dazzling whiteness, and of peculiarly beautiful texture." —*Mr. Mitchell in Mr. Yarrell's 'History of British Birds.'*

*Egg*, 1. White, the size of a hen's egg, but equally blunt at both ends.

FORKTAILED PETREL, *Thalassidroma Leachii*.

*Situation*. On the ground in St. Kilda, the Orkney Islands, &c. "Not far from the top of the cliff were a colony of the forktailed petrel, breeding under the stones and rocks about a yard deep: we were first attracted to them by a low chirping noise, which from time to time the females made while sitting on their eggs. In one hole only did we find the male and female together. The egg is considerably larger than that of the storm petrel, and resembles it in being surrounded at the larger end with a beautiful zone of red freckles. They are nearly three weeks before the storm petrel in depositing their eggs, and in the localities where we found the fork-tailed petrel there was not a single storm petrel."—*Sir William Milner* (Zool. 2059).

*Materials.* None: it breeds in sandy burrows and crevices of sea-cliffs.

*Egg*, 1. White, with a zone of red freckles; almost equally blunt at both ends. It is not a little remarkable that Sir William Milner and Mr. Selby should differ so diametrically on the colour of this bird's egg, Mr. Selby saying it is white. Mr. Hewitson figures the eggs of both species with the zone of minute red speckles described by Sir William Milner.

STORM PETREL, *Thalassidroma pelagica.*

*Situation.* On the ground among stones on small islands, or rather uninhabited rocks, in the Scilly Islands and St. Kilda, in the Orkney Islands, and on the coast of Ireland. It was found by Mr. Hewitson breeding at Foula, Papa and Oxna: this excellent ornithologist says that on the 31st of May these birds had not arrived on the breeding-ground, or, to use the phrase of the fishermen, had not yet "come up from the sea." Some eggs were deposited as late as the 30th of June. The female lays but one, which is oval and white, measuring 1 inch 1 line in length by 10 lines in breadth. During the day the old birds remain within their holes, and, when most other birds are gone to rest, issue forth in great numbers, spreading themselves far over the surface of the sea.

*Materials.* "The nests, though of much the same materials as the ground on which they were placed, seemed to have been made with care: they were composed of small bits of stalks of plants, and pieces of hard dry earth."—*Mr. Hewitson* (ii. 519).

*Egg*, 1. White, the size of a blackbird's. See the remark on colour in the preceding species.

EDWARD NEWMAN.

***Hawking at the Great Wall.*** — As we approach the slightly projecting angle of the coast of Pechili, where the Great Wall ends, in the waters of the Gulf of Liantung, we perceive a narrow tawny line of sand and some green clusters of dark trees, with the gable ends of joss-houses showing through the foliage, and for a back-ground a slate coloured-mountain range. The Great Wall, with its square towers and crenulated parapet, climbs the distant hills, and winds along the level plain at their bases. Landing at some rocks, we pass through a gap in the ruined pier of the Sea-Gate, mount a flight of broad granite steps, and get upon the top of the Wall. Here we see a quaint-looking watch-house, with high peaked roof and twisted gables, some important fat and lean mandarins, a few Tartar soldiers, horses and all, and a very inquisitive mass of shaven-pated, narrow-eyed, long-tailed sons of Han. The "observed of all observers," we pass through the intensely-staring throng, and our walk upon the Great Wall of China is an accomplished fact. When we again descend to the sandy plain, we visit the temples seen nestling so prettily in the sacred groves of dark-leaved trees; and here we find ourselves among fantastic gable ends and carvings, gilded dragons, and great bells hung in old-fashioned belfries. In the courtyard of the temple of the biggest joss is an antique bronze urn, and on either side a colossal tortoise, bearing on its back an upright monolith covered with inscriptions. These old stone tortoises are possibly coeval with the Great Wall, and fashioned some 2080 years ago. The surrounding country has, for this part of China, rather a flourishing aspect, although the building within the Sea-Gate are in ruins, and the "famous myriad-mile Wall," as the Chinese, in the pride of their hearts, love to call it, is in a very dilapidated condition, and in some parts is even banked up, and nearly covered with sand. Sheaves of newly-cut millet (the common food-plant of North China) are piled up in every field —for it is harvest time at the Great Wall; and scattered over the plain are little straggling homesteads, for the most part snugly embosomed among trees, the flat roofs of the low mud-built houses just visible here and there through the green foliage. A few Chinamen are quietly at work among the millet, and groups of donkeys are reposing in the broad shadow of the Great Wall, which is seen vanishing in the far distance. Here we halt while friend Bedwell sketches the scene, and I smoke a pipe and contemplate from behind the cloud. An old gray-bearded man silently joins us, and solemnly lights *his* pipe at the sun by means of a burning-glass, a large pebble lens without a flaw or scratch, and which he mysteriously produces from the folds of his garments. As we everywhere observe along the shores of this gulf, a belt of sandy soil fringes the sea-board, where burdock and the yellow toadflax, a small blue-flowered Iris, the wild onion, and the crane's-bill (*Erodium maritimum*) are the only plants, and lizards and grasshoppers the only animals. In some parts the ground is swampy, and there are shallow snipe-haunted fresh-water pools. Here some teal and the garganey duck are shot by our sportsmen, as are also some curlews and some golden plovers. Two herons, the gray and the white, are common; and in this locality the godwit, the snipe and the sanderling find themselves at home. In the act of demolishing a frog the great bittern is wounded, and rather astonishes the dog "Dash," as, with sharp open beak and bristling loose neck-feathers, he fiercely stands at bay. Overhead the wild geese and ducks are flying South in immense flocks before the cold northerly gales; the ubiquitous magpie is of course perched on the village trees, and the serious rook has work of his own among the grubs in the newly-ploughed fields; a goldencrested wren hops daintily among the low bushes; the wagtail is jerking about the dry mud-flats; the skylark, singing, is lost among the clouds; and the quail is everywhere. Among the crowd of Chinamen at the Great Wall men are frequently seen with beautiful tame hawks on their wrists: these are goshawks (*Astur columbarius*), which they fly at quail. Falconry having come originally from the far East, the practice is doubtless more ancient than the Great Wall itself. In hawking for quail a man is required to carry a net for the captured birds, and also to beat the cover. When a quail rises the master of the hawk directs her attention to the quarry, when the goshawk darts forward and seizes the quail in her talons. The man with the net then runs up to her and takes away the quail, which is deposited with the others in his net. In this manner as many as twenty brace of quail may be taken in a day. The goshawk has a long silken cord round her neck, which is wound on a reel secured to the arm of her owner.—*Arthur Adams.*

*Habits of the Dipper.*—While out with a companion shooting along the river, on the 1st of October, last year, our notice was attracted by two dippers, which continually kept flying before us, every now and then settling on a stone, and jerking up their tails. The male bird would, while sitting, erect its head till its bill pointed straight upwards, and pour forth a small but pleasing song, and the female, uttering her usual note, would hop round and round her mate, every now and then flirting her tail and spreading out her wings, as if in the act of making a courtesy: the male bird while singing turned round, as if on a pivot, so as always to face his partner. After thus amusing themselves and us, they would fly further down the stream, and there recommence their pretty antics.—*John A. H. Brown; Dunipace House, Falkirk, April* 2, 1861.

*Migration of Swallows.*—I see (Zool. 7430) that Mr. Robson has misconstrued my note (Zool. 7315), and I must protest against such partial reference in lieu of extract, as it fails to convey one's meaning; in fact it has done just the reverse, for I am made to say that I think swallows could live through the winter, whereas I maintain that they would "perish for want of food," which would have appeared had he quoted the whole sentence. He says:—"I, however, cannot coincide with him when he says he thinks they would not suffer much, even should they spend a whole winter with us." What I stated was this:—"Swallows having been occasionally noticed by myself and others during the month of December, it might readily be imagined that in a mild winter some few at least would remain with us throughout the year, but I have already recorded my opinion that this is not the case," &c. As to my concluding remark, that I did not believe they would greatly suffer during a mild winter, having in the previous line said that they "must either wing their way to warmer climes or perish for want of food," I did not think it necessary to explain that it was from cold —not hunger—that I did not think they would greatly suffer during one of our "mild winters." That swallows would inevitably perish, were they to attempt to winter with us there can be no doubt, but that they can bear a considerable degree of cold I have had frequent proof. For instance, after a frosty night in November they reappear, apparently as healthy and lively as ever—and why? because flies are still abundant. Again, it not unfrequently happens after their arrival in April that there are frosty nights, and occasional falls of snow; but they neither remigrate nor perish—and why? because, as in November, their food is plentiful. I am therefore led to infer, "that they would not greatly suffer" (provided they could obtain the necessary food) in a mild winter, such as I have experienced here, with little or no frost or snow. One word in reference to the editorial query appended to these notes. "What impulse directs the swallow to its food, invariably guiding it in the right direction?" &c. I shall not attempt to take a "philosophic" or comprehensive view of this impulse or law of Nature, but I would remark in passing that birds of the air, fishes of the sea, and beasts of the earth, are alike guided and directed by an instinctive and inscrutable law, implanted in them at the creation, but of which we can form no conception, it being foreign to our nature. But that it is an imperative law, and one that cannot be transgressed, and which they have no more power to disobey than they have to resist death when they have run out their allotted span of life, there can be no question; so that at a certain season—not to say moment of time—myriads of birds, myriads of fish, are simultaneously constrained to move in a certain or given direction, and that too with unerring precision; whereas man, with reason to guide him, would be at a loss to direct his course, either by land or sea, even for a few hundred miles. It may be asked, how comes it if this instinctive law be so imperative that stragglers of this migratory tribe are so frequently observed when the main body has departed? In reply to this I would state that my observations lead me to believe that none but immature or weakly birds that are compelled to do so prolong their stay, and consequently count for nothing when we take a comprehensive view of the migratory habits of the swallow.—*H. Hadfield; Ventnor, Isle of Wight, April* 3, 1861.

*Occurrence of the Great Spotted Woodpecker* (Picus major) *in Northamptonshire.*—I saw a splendid male specimen of this most beautiful and rare woodpecker the other day, in the shop of a taxidermist of this town. On inquiry I found that it had been shot a few days since, in a wood about two miles from here, by a gamekeeper. I understand that a nest of young of this bird, one of which I saw stuffed in the same shop, was taken last year not far from the same place. There may be some excuse for a gamekeeper shooting a strange bird in his preserves, but there is none for a man taking a nest of young woodpeckers, which could not be kept alive for any length of time. Every naturalist and every gentleman must regret and ought to discourage, and if possible prevent, such wanton proceedings. Two specimens, male and female, of the spotted woodpecker (*Picus minor*), have also been lately shot in the same wood.—*Henry P. Hensman, Hon. Sec. Northampton Mechanics' Institute Natural History Society; March* 20, 1861.

*The Blue Rock Pigeon.*—"Alceste Island"—the name of which recalls the splendours of a former Embassy to China, and many pleasant associations connected with the Narrative of Staunton and the Voyages of Captains Maxwell and Basil Hall, not forgetting Surgeon Macleod's 'Voyage of the Alceste'—is a little high island placed to the north at the extremity of the Shan-tung Promontory, the easternmost continuation of the lofty peninsula which forms the Province of Shan-tung. On the rocks above water, which form a portion of the reef which extends about a mile round the island, lie huddled together numbers of seals, which, on our approach in the boat, all tumble off into the water. The fishing cormorant (*Carbo chinensis*) evidently thinks these rocks an eligible station, and from them the captain shoots a beautiful white spoonbill with a lemon-coloured crest, as he pulls ashore in his galley. Geese, ducks and gulls are also congregated together here in goodly numbers. Indeed, besides the blue rock pigeon, which appears to have regularly taken possession of and to have colonised "Hai-leu," which is the proper Chinese name, the number and variety of the birds which make it their dwelling-place is remarkable. Swallows build in the caves, which are hollowed out in parts of the huge trachyte cliffs; here and there a giant pinnacle—a secure eyrie for the eagle and the kite. In the chasms of the steep precipices, where the sun glints on vast surfaces of shining silvery micaceous schist, on narrow ledges of white, gleaming trachyte, and on the black, frowning, weather-stained, lichen-spotted masses which overhang the little bays, are seen blue rock pigeons (*Columba livia*) walking about, cooing, bowing to each other, and daintily preening their feathers. One is quietly perched on a slender graceful spray, which waves in the wind from one of the fissures half way down a perpendicular wall of rock of many hundred feet; others near the top seem to be paying each other polite attentions on green carpets fragrant with the scent of wild blossoming thyme. Hundreds fly out from the side of the cliff on the report of a gun, and after a short excursion return again to the security of their rocky homes. A brown owl maintains her "solitary reign" in the secret recesses; numbers of pretty hoopoes are flitting about in their peculiar jaunty manner, raising and depressing their crests and archly coquetting one with another. Large kites and two species of hawks sail, poised on outspread wings, high above the island; linnets utter their short pleasing notes as they rise in clouds; and a quail is shot in the high grass at the summit. The little bays which indent the base of the island are paved with smooth rounded pebbles of felspar and transparent quartz, and are peaceful enough to bathe in, but on the weather-side the surf thunders against the rough barnacle-clad boulders, and the war of flint and water is incessant.—*Arthur Adams.*

*Occurrence of the Bustard near York.*—I have this day purchased a fine specimen of the bustard, shot yesterday morning, February 22, at Rufforth, near York: it weighed 10 ℔s. 12 oz.—*David Graham.* There is no ground for doubting that this was a genuine wild bird: I happened to be present when the farmer who shot it brought it into Mr. Graham's shop in his butter basket: it is going to our Museum, having been purchased by subscription and presented to the Rudston collection.—*Thomas Henry Allis.* The following, from a local paper, has been kindly communicated by the Rev. R. Bryan Cooke:—"Mr. Graham, of Market Street, who had preserved the great bustard presented to the Society, gave a short account of the bird. He stated that it was shot on the 22nd of February, at Rufforth, near York, by a man of the name of Rogers. When Mr. W. H. R. Read saw the bird he was anxious that it should be preserved and presented to the Society. This particular species of bustard was known as the Otis tarda, but was now extinct in this country, although half a century ago it was found upon the Wolds of Yorkshire. There were two other species already in the Museum,—namely, the little bustard (*Otis tetrax*) and Macqueen's bustard (*Otis Macqueenii*),—and, with the Otis tarda, the Society would possess three valuable and well-authenticated specimens of the genus Otis. The specimen he had just preserved was an old female bird, which, singularly enough, had about it all the markings of the male bustard, thus rendering it the more remarkable."

*Occurrence of the Ringed Plover at Birmingham.*—A male specimen of the ringed plover (*Charadrius hiaticula*) was shot on the 2nd of April, at Soho Pool—a pool situated within two miles of the centre of the town. As this bird was shot so far from the usual habitat of the species, and as I am not aware that it has ever occurred before in this neighbourhood I think that the fact may be worth recording.—*Henry Buckley; Church Road, Edgbaston, Birmingham.*

*Common Crane* (Grus cinerea) *at Swatow.*—Swatow, lately opened to foreign trade, is the name applied to a harbour in the north sea-corner of the province of Kwangtung, almost bordering on that of Foo-kien, and some 90 miles south of Amoy. The foreign settlement is clustered on a small island known as Double Island, at the mouth of the fine river Han, which runs up past the village of Swatow, situated on its left bank some seven miles up, then forms into a large shallow basin, whence it strikes inland in a north-westerly direction. For years before the harbour was opened to legitimate trade it used to be one of the haunts of opium-receiving hulks and opium schooners, and in later times became the resort of coolie kidnappers and of much unlawful traffic. The surrounding country resembles in general aspect that of Amoy, and is perhaps even more destitute of verdure than our barren island, but, from its possessing such extensive sandy beaches and muddy creeks about the basin and at the river's mouth, it has been long reputed as one of the most favoured spots for waterfowl known on the Chinese coast; the spoonbill, the oystercatcher, the avocet and the phalarope have all been procured there frequently; and I was further informed by an intelligent merchant captain that the Turkey bustard, as he termed the bird, had also been met, and was eagerly pursued for its dainty flesh. You can easily imagine how anxious I became to get possession of what I supposed was a novel species of bustard (*Eupodotis*). I sent down a Chinese birdstuffer to the spot, and wrote urgently to my friends there that they might keep a sharp look out after these birds, but all without success. Lately, however, the British Government, having opened the port under the auspices of Mr. Consul Caine, that gentleman, being a keen sportsman, as well as a lover of birds, made great exertions to procure a specimen of the so-called bustard. His endeavours have been crowned with success, and he now sends me one of the much-coveted species. But, alas! it turns out to be the crane (*Grus cinerea*), which I am informed arrives during winter in the neighbourhood of Swatow in flocks flying high and screaming. These flocks seldom frequent the sea-shore, but prefer the sandy fields planted with sweet potatoes (*Batatas edulis*), on the tubers of which they feed. They run with celerity before taking wing, and are somewhat shy of approach. Every winter season a few may be seen, but they are by no means regular in their migrations. The specimen received answers in every respect to a two-year's bird of Grus cinerea, and exhibits the same peculiarity of structure in the tracheal convolutions as that assigned to this species in the descriptions of authors. Bill along culmen 4 inches; along upper edge of lower mandible 4 inches. Wing 19 inches. Tarsus $9\frac{3}{10}$. Middle toe $3\frac{7}{10}$; its claw $\frac{7}{10}$. Outer toe 3; its claw $\frac{5}{10}$. Inner toe $2\frac{7}{10}$; its claw $\frac{7}{10}$. Hind toe $\frac{8}{10}$; its claw $\frac{4}{10}$. Bill flesh-brown, yellowish horn-colour for more than an inch at the tip. Inside of mouth flesh-colour. Iris pink. Legs and claws black. All those who have tasted the flesh of this bird speak very highly of its flavour. Grus cinerea is said to be found in India and throughout Asia generally. Schlegel notices one individual from Japan, which differed in the striking length of its beak, and to which he thereupon assigned the name of Cinerea longirostris. The Swatow specimen is in no way separable from the common species, and the new winter resort of this bird is therefore a fact worth imparting to naturalists. I have heard tell of a bustard found at Shanghai and Ningpo, and strongly suspect that the same may be referred to the species under consideration.—*Robert Swinhoe; British Consulate, Amoy, February* 9, 1861. [Should not Schlegel's name be *Grus* longirostris?—*E. N.*]

*Storks in Zealand.*—The storks arrived this morning, so we may really expect summer; for storks, unlike mortals, are never wrong in their calculations—odd birds they are. It must be a curious sight to witness one of their gatherings previous to departure at the approach of winter. A friend of mine came across an assembly of four hundred perched on the eaves of a farm-house in Zealand, and watched their proceedings. Before starting they passed in review the whole flock, and singled out and separated the aged and weakly from the rest, and then, with one accord, pounced upon them, pecking them literally to pieces; this ceremony over, they started for Egypt. How they got their reputation for filial piety I cannot imagine. I heard a curious anecdote about them a few days since. An English manufacturer, settled somewhere in Zealand, amused himself by changing the eggs laid by a stork, who annually built her nest on his house, for those of an owl. In due course of time the eggs were hatched, and he was startled one morning by a tremendous row going on in the nest of the parent storks. The male, in a violent state of excitement, flew round and round his nest; the female chattered away, protecting her nestlings under her wings; it was quite evident that the stork was not satisfied with the produce of his helpmate; there was something *louche* about the whole affair; he would not recognise the offspring. After a violent dispute the male flew away, and shortly returned, accompanied by two other storks—birds of consequence and dignity. They sat themselves down on the roof, and listened to the *pros* and *cons* of the matter. Mrs. Stork was compelled to rise and exhibit her children. "Can they be mine? exclaimed the stork. "Happen what may I will never recognise them." On her side Mrs. Stork protested and fluttered, and vowed it was all witchcraft—never had stork possessed so faithful a wife before. Alas! how seldom the gentle sex meets with justice in this world, when judged by man, or, in this case, stork kind. The judges looked wondrous wise, consulted, and then of a sudden, without pronouncing sentence, regardless of her shrieks for mercy, fell on the injured Mrs. Stork, and pecked her to death with their long sharp beaks. As for the young owls, they would not defile their bills by touching them; so they kicked them out of the nest, and they were killed in the tumble. The father stork, broken-hearted, quitted his abode, and never again returned to his former building-place. Six years have elapsed, and the nest still remains empty; so stated my informant.—*Marryat's 'Residence in Jutland.'*

*The Black Surf Duck.*—On the Shan-tung side of the Gulf of Pe-Chili is a remarkable promontory with a flat sandy neck and a saddle-head of granite. This from a distance looks like an island, but on a nearer acquaintance its true nature is obvious. The surf duck and Saddle Point go together in my mind and refuse to be separated, so you cannot have one without the other. A gale of wind had swept over the gulf the day previously, so the water is now unsettled and turbid, a dull haze formed of fine sand fills the air, and a "mirage" causes everything at a distance to assume a distorted, unreal appearance. As you land you encounter at first nothing but glare and sand: along the margin of the shallow bay and in the sea-weedy pools left by the receding tide are countless myriads of ladybirds drowned, like Pharaoh's host, in the waters of the sea; they have been blown from the opposite coast, and are now driven up by the waves in ridges miles long and in red heaps among the hollows and corners of the outcropping granite rocks. Here and there we come across a magnificent swimming crab (*Neptunus gladiator*, De Haan); but these "waifs and strays" are just as eagerly sought after by lean, hungry cormorants and loud-screaming gulls as by inquisitive peripatetic naturalists, so the latter "*animal implume bipes*" only comes in for a scattered mass of fragments too hard and spiky even for the maw of a cormorant or a gull. Some specimens of a pretty Polybius, in a perfect state, fall however to his share. As we descend the brown and barren stone-strewn hill towards a little Sahara of sand a hare limps away before us, and the hot bare rocks are enlivened by the coquettish movements of the pretty hoopoe, but beyond these and grasshoppers there are no signs of life. We pass through a small, close, unsavoury village, and arrive at a vast level sandy plain, quite hard and dry in some parts, but showing

**generally the characters of a salt-water swamp, with glistening white patches of incrusting salt, shallow lagoons and tawny spaces, where the curlews stalk about like so many diminutive ostriches, and where, by mutual agreement, avocets, sandpipers and godwits assemble for a diligent search after palatable worms. Across this weary waste mules and donkeys wend their way in single file along the narrow paths, and here and there a dark blue dot points out some patient Chinaman digging land-crabs for his supper. As we are going off to the ship the poor fishermen, in great dog-skin boots, come in through the surf, in rude log-built catamarans: weary and dripping, they fling down on the sand great heaps of turbot and plaice, soles and skate; they also fling down dead surf ducks (*Oidemia nigra*) in astonishing numbers, which they say were drowned in the gale and got foul of their nets. These ducks are not uncommon all along the Shan-tung coast: they are ungainly surf-loving birds, seeking safety from the sportsman chiefly in diving, and are very difficult to hit; on the flash of the gun they dive under the water, hardly ever waiting for the report: they fly in a straight line just above the surface, in a heavy and awkward manner. As articles of food they are abominable, their flesh being hard, dark, dry and fishy.—*Arthur Adams.***

## *Rambles in search of Skulls.* By ARTHUR ADAMS, Esq., F.L.S., &c.

THE remark of the "needy knifegrinder" to the compassionate gentleman who inquired into his history, "Story! God bless you, I have none to tell," will equally apply to me. And yet, as I meditate over a quiet pipe in my floating sanctum, each bone and skull that hangs around me recalls certain little incidents which I am unwilling to keep entirely to myself. That little cramped foot reminds me of the bombardment of Canton, and was taken from an unfortunate woman who was killed by one of our shells. That baby-skeleton points to the prevalence of infanticide in China, for its owner was drowned in the Pearl River by its unnatural parent. That mummified fœtal deer brings before my mind's eye the shaven-pated doctors of Japan, who find in such as that a valuable remedy.

I confess to a weakness for skulls: from the simple cartilaginous rudiment of the cuttle-fish to the ample dome where intellect once sat supreme, all skulls have great attractions in my eyes. When, therefore, I "pitch my foot" against a skull, like Hamlet, Prince of Denmark, I take it up and regard it with speculative interest. I touch lightly, however, on the bleached human skulls I obtained by the banks of the Pearl River; suffice it to say that several, in beautiful preservation, adorn my collection. In one I discovered in a "chatty" on the green summit of Tiger Island a snake had formed her nest; and another in my possession was the plaything of little Chinese children, who were rolling it about on the ground.

For many skulls I am indebted to the prowess of our sportsmen. My seals are from Todomosiri, my great eagle is from Manchuria, my Moschus crania are from the Korea, and my albatross and giant petrel from the broad bosom of the Atlantic. Others are of my own procuring; thus my turtles and my pigmy deer are from Sunda Strait, my scaly anteater is from Whampoa, my Babirusa's skull is a present, and a few are purchases from Canton old curiosity-shops. My largest skull once belonged to an antlered monarch of Manchuria; and this is the story of its acquisition: — A party leap on shore at Sio-wu-hu Bay, and, like young horses just let loose, disperse themselves, in various directions, for a glorious run. Some scour the plain, rejoicing in their liberty, and gather great bunches of roses and peonies; some wander thoughtfully along the strand, thinking possibly of home and Polly; one, gun in hand, dives among the oak-woods, intent on game; and one, sweeping-net aloft, wades gleefully among the flowers. But now the sun declines, and all must go on board. A form approaches from across the plain, like amorous Falstaff at Herne's old oak; huge antlers branching out above his head; a vasculum, cram-full of plants, athwart his back; and in each hand, blushing floral trophies: it is Wilford of the "seven-league boots," who has found the cervine relic in the woods.

And now, to change the scene, I saunter along a winding path, narrow and irregular, by the side of a rocky gully in Tsu-Sima. The gurgling water rolls clear and sparkling over its stony bed, except where a big boulder checks its gentle course, when a deep pool is formed, where little trout-like fish calmly disport themselves. The sides of the ravine, clothed with leafy beauty, rise up around; and trees of great variety, waving their green heads in the soft sea-breeze, are springing from every rift in the slate-stone rocks. Onward I stroll, now taking a snail from the bushes, and anon making prisoner of a longicorn, till I emerge, from under the wild mulberry trees, upon an upland slope, green and pleasant to the eye, and bordered with dark woods and yellow raspberry-bushes. What is that white gleaming object in the grass? A cranium of some unknown deer of Japan? Nay, smile not, gentle reader; 'tis a horse's skull!

I am now in Alga Bay, a deep inlet ending in a river, with wild, uncultivated, rocky sides, covered with wood from the water's edge. I work my way from near the entrance to where a party is hauling the seine on the right bank, wading through long rank grass, sweeping for insects among the flowers, and beating the young oaks; all the while stumbling over mouldering trunks of trees, and loose, old, moss-grown stones; out by the clear sunshine, and the sandy shore with its heaps of drift-wood; picking up Harpali, under great chips of trees felled long ago by hunters; detecting Cecina manchurica, a new form of mollusk, under damp logs near the sea. Half maddened by mosquitoes in the cool shade of crowded trees; half blinded by a gauze veil which I ship in despair, I can yet see a strange insect in the air, flying like a longicorn. At risk of broken shins I give chase and capture it, and find it a Myrmeleon-like Neuropteron, with curious cup-shaped knobs at the end of long antennæ; I pass among the prostrate branches of a huge linden tree, lately felled by fishermen and still laden with blossoms, from which bees are busy extracting nectar; I come across bushes crowded with Canthari of a pale red colour, with green head and thorax; I hear an ominous rustle of dead leaves on the dry elevated ground, and see the slow, fat, undulating form of a great-headed adder, angrily making his way from the invader of his solitude; and now I suddenly encounter a stone arch of uneven granite, rude, natural and Cyclopean, overgrown with weeds, spotted with lichens, and half-concealed by a rank undergrowth, yet a veritable arch of rugged stone; and I think of those mystic Stonehenges and primæval altars, built by white-robed, bearded Druids, on plains and in sacred groves, full of mistletoe-covered oaks, for purposes of mystic and most probably unholy worship. Under my rude arch I creep with a childish kind of pleasure, although to have gone round would have been far easier. The strong lines of a spider's web, of unusual size, with a fat bloated occupant in the centre, opposes my progress, but only for a moment; Arachne's web is rent, and the "long-legged spinner" placed in durance vile. At length, fatigued with my exertions, I repose on a log near the shore, and observe, not very far off, a something in the drift, which turns out to be an imperfect skull of Steno, a genus of true dolphins.

To the north of Cape Notoro, in Amiva Bay, Saghaleen, is a rocky and a lonely spot. It is a long, low point, projecting into the beautiful wide bay, composed of great rounded rocks and drifted shingle. Here, sheltered by the granite boulders, and concealed by coarse grass and reeds, come the old and the sick of the seal tribe, which inhabit these waters, to seek refuge from their fellows, and in peace to breathe their last. The impress of their huge bodies may be traced on the dead, soiled, flattened herbage. From the quantity of bones strewn about the place I think this must be the chief cemetery of the seals. It is, I have said, a wild and lonely spot. The only sounds that disturb the silence are the harsh notes of wild swans passing high overhead, and the frightened caw of a rook soaring, dodging, and trying in vain to evade the pursuit of a determined hawk. The solitary wildness of the seals' graveyard is hardly relieved by the sudden appearance of three Ainos, aborigines of Saghaleen, who have come over the neighbouring cliffs to gaze upon the brown-haired strangers. These stand, motionless and silent, watching our every movement with a fixed and wondering stare. Long white spinous processes of the dorsal vertebræ of a whale stick up above the grass, looking like tombstones of departed Phocæ. Here I discover a rare prize, in the skull of Lobicephalus, a large fierce seal, with a vertical bony crest extending from the frontal bone to the occiput. An imperfect skull of the Halicore, or dugong, is another grand addition; and I obtain, besides, the crania—both, alas! much injured—of two species of Delphinus.

We are now in St. Vladimir Bay, a wide and deep bay on the Manchurian coast, a little north of Alga. Sea-cliffs bound the long curved outline of the bay, their summits green with oaks. Below them the ground is level, and a belt of verdure extends from the cliffs to the water's edge. The undergrowth is dark and humid, and the number of fallen trees, in various states of decay, promise well for snails and slugs and fungus-loving beetles; Boleti stud their rotting boles, and in these Mycetophagi reward our diligent research. Shade of Fabricius! what swarms of insect life! The ants alone are worthy the pen of Nylander; and as for the spiders, the erudition of Walkenaer and the industry of Blackwall would be needful to pourtray their varied forms, and illustrate their wondrous instincts. I penetrate a thicket, and bushes laden with bunches of currants grow all around. Feeding on these with the greedy voracity of a schoolboy, my attention is diverted to a split bamboo, with the valve of a Pecten stuck in the fissure. A nearer scrutiny assures me this means *water;* and lo! a clear pool lies hid among the herbage. Some wandering Tartar has been here, and, having slaked his thirst, has in gratitude placed this useful beacon. But what is that suspended from a bough which overhangs the beach? It is a skull, and the skull of a bear, for the lower jaw and other bones of the defunct Bruin are lying on the shingle beneath; and there hangs his cranium, like as the sour grapes above the desiring fox. Sailors must obtain the skull, for I cannot. Now, as good luck would have it, the sailors wanted water, and close at hand a tiny spring distilled a slender trickling rivulet from the cliff, and filled an excavation in the shingle. By enlarging this you get a goodly cistern, and, by means of a hose and Earl's engine, the cold clear water is speedily transferred into a canvass tank in a pinnace. Accordingly in due time come the sailors, and very shortly after their arrival the cranium of the bear is mine.

ARTHUR ADAMS.

Shanghai, January 29, 1861.

*Nesting of the Crisped Pelican in Western Greece.*—Time was, and not so long ago, when Pelecanus crispus lived in hundreds all the year round, from the rocky promontory of Kourtzolari, hard by the mouth of the Acheloüs, on the western extremity of the lagoon, to the islands of Ætolico, up its northern arms, and, on the east, to the great mud-flats which mark the limits of the present delta of the Phidaris. Now-a-days a solitary individual may be seen fishing here and there throughout the lagoon, but the small remnant of this once mighty host have made their last stand upon the islands which divide the Gulf of Procopanisto from the Gulf of Ætolico. Here, towards the end of February last, the community of pelicans constructed a group of seven nests,—a sad falling off from the year 1858, when thirty-five nests, the remains of which had not then disappeared, were grouped in contiguous proximity upon a neighbouring islet. It needs not the nose of a pointer to discover the locality, even if the large white birds themselves were not a sufficient guide. As we approached the spot in a boat the pelicans left their nests, and, taking to the water, sailed away like a fleet of stately ships, leaving their newly-built establishment in possession of the invader. The boat grounded in two or three feet of mud, and when the party had floundered through this the seven nests were discovered to be empty. A fisherman had plundered them that morning, taking from each nest one egg, all of which we of course recovered. The nests were constructed in a great measure of the old reed palings used by the natives for enclosing the fish, though with these were mixed such pieces of the vegetation of the islet as were suitable for the purpose. The seven nests were contiguous, and disposed in the shape of an irregular cross, the navel of the cross, which was the tallest nest, being about thirty inches high, the two next in line on each side being about two feet high, the two nests forming each arm of the cross a few inches lower, and the two extremes at either end being about fourteen inches from the ground. These latter, it is presumed, were intended for the junior partners of the firm, in the same way that the great bear of nursery tales has a big seat, his wife a middling seat, and the little bear a small seat. The eggs are chalky, like those of the Pelecanidæ generally, very rough in texture, and some of them much streaked with blood.—*W. H. Simpson, in 'Ibis,'* ii. 395.

*Lizard with Bifid Tail.*—I happened a short time since to meet with an interesting specimen of the common lizard bearing a bifurcate tail. I am not aware that such is a usual termination of the caudate appendage in this class of animals, and it may be worth recording. This specimen was captured when basking on a warm bank, and it is a male. The colour is a rusty brown, faintly barred and streaked. I conclude from this and from the size and length of the tail that it must be of very mature growth. Whether the condition of the tail results from injury or whether it is congenital may be a fair question; I should rather opine the latter, as there seems no reason to think a member would be reproduced in a duplicate form, at least such an excess of reproductive energy must be very uncommon.—*J. Hawkes; Kent County Ophthalmic Hospital, Maidstone, March* 23, 1861.

*Notes on the Natterjack.*—When visiting the other day Mr. Thomas Brightwen the conversation happened to turn upon our natural curiosities, and he wished me to write to you about one of them, the natterjack as we call them (*Bufo calamita*). We have them in immense numbers here, and they have several names, "running jacks," "running toads," while the common toad is distinguished as the "hopping toad." When repairing a floor in my dining room some years ago we took half a bushel of natterjacks out. In the parts of Norfolk where they are not to be found they are the "magic toad," employed to cure rheumatism, &c. I know a man who caught a "running toad," shut it up in a small tin box, and wore it next his heart, the supposition being that as the toad dried up the rheumatism would leave. The backbone of a "running toad," is supposed to swim against the stream, and if reduced to powder and given to a horse as snuff the horse will follow you anywhere — a new way this of "Rarey-ing" a horse. These notions only prevail where they cannot easily be put to the test of a trial. There is no good account of these animals; I have read Bell's 'British Reptiles,' the translation of Cuvier, &c., but none give an account from personal observation. The habits of the natterjack are very different to those of the common toad. They, like hares, make little forms in my onion beds, and like those animals change them according to the direction of the wind, or rather, I suspect, according to the dryness of the wind, as in very dry weather they bury themselves up or get under flagstones, &c. They seem to suffer from dry even more than the common toad; their croak too is different, and they appear later in the spring. May I commend them to your notice? I shall be most happy at any time when you may visit Mr. T. Brightwen to show you some or to send some to you. I have sent some through friends to Professor Bell and to the Zoological Gardens.—*Edward Gillett; Vicarage, Runham, Stokesby, Norwich.—Communicated by P. H. Gosse, Esq.*

*Toads and Lichens.*—After much scrambling and unwonted exertion, I find myself on the top of the hill, among a heap of Old-World stones. It is just after a heavy rain, and the rocks are still wet and dripping. I see nothing but a number of gorgeous toads in a bright livery of black and scarlet, and lichens enough to satisfy the desires of the Rev. C. Berkeley himself. The rocks at these elevated situations are larger and more visible than those below, which, moreover, are often concealed by Eleagnus bushes, besides Smilax vines and other creepers. The ancient weather-stained masses are often heaped up in the strangest confusion, and possess a positive though borrowed beauty from the Lepralias and other lichens with which they are encrusted. They are usually of a frosty white, pale green or rusty brown, but sometimes you observe a bright orange patch. Among these lichen-covered fragments of primeval granite I find the harlequin toads; and as the rain has brought out the worms and other dainties on which they feed, they are hopping lazily about in all directions. I know not if this very peculiar toad has been described, but I have preserved some specimens in spirit for Dr. Gray. The orange, however, has turned dull yellow from the action of the alcohol. — *Arthur Adams ; Tcho-lien-hae, Chusan Harbour, Korea.*

*A Remarkable Shark.*—On the 20th of November, 1859, we touch at the Oki Islands in the Sea of Japan, and I land with the captain at the village of Nisi-Bama. The valleys between the steep wooded hills are very curiously cultivated in terraces, causing them to resemble so many verdant amphitheatres. We pass through a wicket, ascend a steep path through a grove of fine trees, and find it leads to the trunk of a gigantic bastard banyan or Ficus nitida, evidently a sacred tree, for the base is covered with paper effigies and other votive offerings, and a little gaudy joss is discovered squatting in a niche. On regaining the village we find the people very civil, though rather in awe of the foreigners, possibly the first of our race they had ever seen. Their houses are neatly built with tiled roofs, and comfortable sheds for horses, cows and pigs. Dried squids abound, and from the projecting rafters of some gable ends I observe sundry grotesque-looking dried sharks' heads, evidently the trophies of adventurous fishermen. Entering an abode so decorated I encounter an aged crone pounding the daily rice, who was inclined to be in a rage, but with much art and "*suaviter in modo*" I effect the purchase of the architectural ornament for the small sum of one itzebu. This squaline caput is sufficiently bizarre to merit observation. It has been inspected by many a seafaring man, from an Admiral to a powder-monkey, and its physiognomy, though sufficiently striking, is unknown even to a class usually well acquainted with the tribe in question. The head is narrow and somewhat compressed, and covered with a smooth black skin. The snout is long, triangular and pointed, not depressed, and projects considerably over the mouth, which is open, with a wide gape, and the gums are exposed and painted red. The eye is large and round, and unprovided with a nictitating membrane or eyelid. The nostrils are oblique, ear-like openings placed at the lower part of the muzzle, midway between its tip and the eye. The teeth are arranged in three series, the outer row erect, the middle semi-erect, and the inner decumbent. They are similar in each jaw, and are long-pointed curved cusps, with their lateral edges sharp and simple.—*Arthur Adams.*

*Snake-like Fishes.*—Any particulars concerning ophioid fishes, in which, Mr. Editor, "your spirit doth take delight," will I am sure be welcome to the pages of the 'Zoologist;' and have I not a right to speak about snake fishes? did I not capture in the middle of the South Atlantic a fish, which, if it had measured fourteen feet instead of fourteen inches, would have created far more astonishment than the Regalecus Jonesii, *Newman?* My fish (Nemichthys scolopacea, *Richardson*), taken in the towing net, and even now without a place in the ichthyological system, much more resembles a sea-serpent than, Mr. Editor, does yours. It is scaleless, and has sharp-pointed teeth inclined backwards like those of a serpent; the body is ophioid and spotted on the sides; the eye is large and conspicuous; the jaws are very long; the gape is wide, and the back is furnished with a series of rays which extend crest-like from the nape to the end of the tail, which has no caudal fin. You will see a figure of it from my drawing in the 'Zoology of the Voyage of the Samarang.' Who shall say it is not the fry of a very formidable spar-snapping sea monster? But the object of my present communication is to show that Swainson is in error when he says of the ribbon fishes, "These meteoric fishes appear to live in the greatest depths," &c. My experience to the contrary is founded on the silvery hair-tail (*Trichiurus lepturus*, Linn.), one of the largest of the flattened small-scaled fishes. At Staunton Island, Shan-tung, we obtained large numbers averaging five feet in length, including the slender caudal filament. It is common along many other parts of the coast of northern China, and in the Korea it is salted and dried, and forms an important item in the diet of these people. It is most delicate eating, and cut in lengths and fried it forms a very pretty dish. The bones are so few and easy to separate that even a hungry man may partake of it without fear of being choked. Everywhere it is taken at a considerable distance from the land, and at the surface. Off the Regent's Sword, or Lian-tie-Shan Promontory, great numbers of strange-looking craft in the form of rude rafts put boldly out to sea, long black nets coiled up snugly in the middle, four men working at huge skulls and the others smoking and chatting. The net is paid out in a circle, and when the end is come to, the net is turned back and hauled in, securing frequently large numbers of the silvery hair-tail. Many hundreds of these rafts surrounded the ship as she sailed through them in the glow of a glorious sunset.—*Arthur Adams.*

*Musical Fishes.*—"Mute as a fish" is certainly very expressive, and moreover is generally true, though I have heard toad-fish grunt pretty loudly when taken out of the water. A "fish up a tree" seems an almost impossible thing, but have we not the climbing perch of India? A "fish out of water" appears strange and unnatural, but species of Periophthalmus are seen hopping about the mud-banks of Chinese rivers like any frogs. With fishes that fly or suspend themselves in the air we are familiar. That certain fishes are enabled, by means unknown at present, to produce sounds under water is no less certain, and is a fact well known to seafaring men. Captain Ward tells me that the "drum" is familiar to the inhabitants of Charlestown in South Carolina. When he was lying off that place in the "Thunder" mysterious sounds were heard from time to time in the bottom of the ship, which were generally ascribed to insects in the spirit room. One day, however, some ladies visited the ship, and on hearing the peculiar vibrating noise exclaimed, "Ah there is the drum-fish." They described it as of large size, and declared that the roe was considered a great delicacy. In October, 1857, the "Actæon" was lying off Macao, near the entrance to the Canton or Pearl River, and every evening the drum-fish used to assemble around the vessel and continue their musical humming till about midnight. My messmate in the next cabin would call out "There go the drum-fish," and we would sometimes lie awake for an hour or so listening to the sounds. As we were only separated from the fish by the thickness of the ship's side their continuous drumming was very audible. Sometimes they appeared to be "skylarking" or darting at the copper, as if feeding on the barnacles, and at other times we used to fancy they were rubbing their scaly sides against the vessel.—*Id.*; *Shanghai*, *December* 8, 1860.

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*Occurrence of Amathina tricarinata in Saghaleen.*—The occurrence of rare birds and peculiar beetles is often recorded in the 'Zoologist,' almost to the entire exclusion of Crustacea and Mollusca. I have on several occasions endeavoured to supply this *hiatus* by a few brief notices of the finding of crabs and shells, frequently showing the extreme geographical range of particular species. I believe this will be found the extreme northern range of Amathina tricarinata of Chemnitz,—a shell so well marked as to render tracing its distribution in space very desirable. The southern extremity of the island of Saghaleen (I spell it as it is pronounced by the Ainos) is named Cape Notoro,—a long, rather low promontory with a cliff-like head and a reef of straggling rocks, which extend off it at some distance. Between the reef and the rocky cape there is a level stony flat, which is nearly dry at low water. The tide is out, so, armed with my walking-stick, I pass along the exposed level rocks round the very end of the Cape, and a wild scene it assuredly is. As the tide comes in, the roaring of the surge, as the breakers from the reef come rolling in, is extremely solemn. The feeling of loneliness is so complete as almost to make the flesh creep as you pass one corner after another, and find dark caves in the rocks where Bruin may be lying *perdu.* Far out upon a sandy spit the black-tailed gulls (*Larus melanurus*, Temm.) are assembled, and along the rocky level the rooks are busy feeding on the rotting Cryptochitons, which the surf has thrown up dead upon the strand. The white bones of a whale, half-buried in the sand, show where some leviathan has been wrecked in trying to double the Cape. On the opposite side I find a sandy bay, with great heaps of Zostera, Fucus, Laminaria, and other sea-weed, thrown up recently upon the beach. Here I find Amathina tricarinata, and among the weed and along the high-water line, where fragile things are often deposited by the ebb tide, I gather a good store of Velutinidæ, pink, calcareous, black, membranaceous, brown or covered with a velvety epidermis.—*Arthur Adams.*

*Squid-fishing in Japan.*—On the 19th of November, 1859, we arrive late in the evening off Nisi-Bama, in the Oki Islands,—a very charming little group not far from the shores of Niphon. As we near the anchorage the lights on the water are so numerous and brilliant, and all moving about in such an exceedingly *ignis fatuus* kind of a manner that a boat is sent away with the interpreter to ascertain the cause of such an unusual spectacle. On his return "Oudah" reports that the maritime "will-o'-the-wisps" belong to fishing-boats, hundreds of which, he says, are out looking for "Ika-Surame," which phrase, after much circumlocution and many elaborate explanations, turns out at length to mean simply "Squids." The lights are produced by kindling birch-bark in small kinds of gratings with long wooden handles, machines known among seafaring men by the name of "devils." The flame of the fires is very clear and vivid, and the "devils" being held over the sides of the boats attract the squids. These latter, I find, are a species of Ommastrephes, a sort of sea-cuttle, which is nocturnal in its habits, and which swims very rapidly near the surface in immense shoals. The squids are taken by what is known among fishermen as "jigging." The "jig" is made of iron, and consists of a long shank surmounted by a circlet of small recurved hooks. These cuttles are favourite articles of diet both with the Japanese and Chinese, and are very carefully dried for the market and sold in vast quantities. They are also extensively used as bait in fishing for bonito and other large Scomberidæ, which abound along the coasts; the squid is strung through its entire length, the club of one of the long tentacular arms artfully covering and concealing the hook. Near Hakodadi there is a small fishing village exclusively devoted to the capture and curing of these nutritious Cephalopods. Many hundreds of thousands may here be daily seen drying in the open air, all very nicely cleaned, each kept flat by means of little bamboo stretchers, and suspended in regular rows on lines which are raised on poles about six feet from the ground. The open spaces are filled with these squid-laden lines, and before all the houses in the village squids everywhere form a novel kind of screen. The Japanese name of the place is "Shai-Sawabi," but by us it was always called "Squid Village."—*Id.*

## *Notes on a Trip to Loch Rannoch.* By EDWIN BIRCHALL, Esq.

A LEISURE week during the past summer enabled me to gratify a long-cherished wish to visit this celebrated entomological locality. Entering Scotland by the estuary of the Clyde, the mountains of Argyleshire and the rugged hills of Arran close in upon the river and give to its reaches the aspect of lakes, but as the stream continues its course towards Glasgow the great river gradually assumes a ditch-like aspect, running between low marshy banks, the deep-water channel being indicated by small stone erections, each surmounted by a pole crowned with an empty whiskey barrel,—rather an original emblem of Scotch taste and nationality.

A pleasant day was spent with my friend Thomas Chapman, at his county residence on the shore of Loch Long, and a stroll up the hill behind the house, among many other insects, produced Scopula alpinalis, S. decrepitalis, Coremia munitaria, and Larentia flavicinctaria, none of which I had before seen alive. Next morning I was *en route* for Rannoch; rail to Dunkeld, thence coast to Pitlochie, rapidly took us within thirty miles of our destination; but from this point visitors must make their way as well as they can. Our old friend Foxcroft used here to put his traps into a barrow, and with sturdy independence wheel it before him into Rannoch, often doubtless on the way deserting the shafts to make a dash at a passing "Glory," or pin a sleeping Nubeculosa on the stem of a rugged birch; and I may here mention that he seems to have been universally known and much respected at Rannoch, and apparently very sincere was the regret expressed at the news of his death.

The road runs for several miles through ancient birch-woods, then along the banks of Loch Tummel, and skirting the base of the mighty Schehallion commands glorious views of mountain and lake. Independently of its majestic aspect, Schehallion possesses interest of a varied nature; it is said to have afforded shelter to Bruce after the battle of Montrose; on its side the truth of the theory of gravitation was practically demonstrated, and the planet was weighed in the philosopher's scales; and, lastly, it is the locality for that rarest of British Noctuæ Pachnobia alpina.

Loch Rannoch is about ten miles in length, and, except a narrow belt of cultivated ground bordering the lake, is buried in woods, morasses and mountains—a very Paradise for the naturalist, no matter what his peculiar bent may be. There is a good inn at Kinloch-

Rannoch, at the foot of the lake, and a small but tolerably comfortable one in the village of Ignalin, at the head.

Grouse, both black and red, were very abundant on the hills, and once a noble capercally was observed sunning himself on a fallen tree, and looking very like a turkey. Gamekeepers were reported to be both numerous and obstructive, but we saw none of them, and roamed over moor and mountain without hindrance or annoyance of any kind.

The nests of Formica rufa which abound throughout the district, many of them three feet high and eight or ten in circumference, were a source of great interest, not only as wonderful monuments of patient labour, but as containing that singular and local insect Tinea ochraceella. I am sorry to say we overthrew many nests, and entailed sad trouble on the industrious owners, before we hit upon the right method of capturing the moth, which, for the use of future visitors and for the protection of the unfortunate ants, I beg to say is to search the stems of grass around the nests late at night with a lantern, or early in the morning before the sun is hot, when the insect may be taken in the greatest profusion, whilst during the day a whole nest may be rooted up and only a solitary specimen disturbed from its recesses. A large Coleopterous larva was abundant in the ants' nests, probably Cetonia ænea; this beetle came freely to the sugared trees during the day. Although the end of July snow lay in large patches on most of the hills; a mass to which one of our party ascended was apparently several acres in extent, and upwards of six feet in depth, and it seemed probable could bid defiance to what remained of the inclement summer of 1860. What is left of the Black Forest is principally composed of pine trees, some of these veritable giants; the younger plantations are mostly birch and oak; fern and heath are everywhere.

The following list includes our principal captures during the five days of our stay at Rannoch.

Erebia Blandina. Abundant on the heaths.

Chortobius Davus. Abundant on the heaths.

Endromis versicolor. Larvæ on alder.

Ceropacha flavicornis. Larvæ on birch.

Xylophasia polyodon. Black variety not infrequent at sugar.

Noctua xanthographa. Several specimens closely approaching N. sobrina in appearance.

N. festiva and N. conflua. Extremely abundant at sugar. The series obtained does not favour the idea of N. conflua being a distinct species.

Hadena adusta. Abundant at sugar.

H. contigua. Abundant at sugar.

Aplecta nebulosa. Scarce at sugar.

A. tincta. In swarms at sugar.

A. occulta. Came freely; all the black variety. A. tincta sips the sugar with its wings quivering like Thyatira Batis, and drops the moment the light approaches. A. occulta sits as if glued to the tree, with wings flat almost as those of Triphæna pronuba. Neither species will remain quiet when boxed; they must be killed as taken to secure fine specimens.

Leucania impura, Agrotis porphyrea.

Psodos trepidaria. Abundant on the summit of Craig Cross, but time did not allow us to make the ascent.

Scodiona Belgiaria.

Larentia cæsiaria. In thousands.

L. flavicinctaria. Not uncommon. Sitting on rocks.

L. didymata.

Dasydia obfuscata. On rocks at considerable elevations, but both scarce and wild.

Geometra papilionaria. At light.

Fidonia quinquaria. Abundant among brake fern, but local.

Coremia munitaria. In every water-course.

Acidalia fumata. Disturbed from among heath. Common.

Emmelesia ericetaria. In profusion on the hills.

E. blandiaria.

Ellopia fasciaria. Beaten from pines.

Scopula alpinalis. Abundant.

Crambus pinetellus, C. margaritellus, Penthina prælongana, P. ochromelana, Tinea ochraceella, Depressaria ciniflonella, Cetonia ænea.

Trichius fasciatus. On flowers of Orchis.

Pissodes pini, Rhagium indigator, Serica brunnea.

I was much struck with the great variation from ordinary southern forms of many of the Rannoch Lepidoptera, and take the present opportunity of urging closer attention to the influence of locality, food, &c., on specific distinctions, believing that much of the causes and limits of this variability may be learned by careful observation.

Mr. Darwin's theory seems to have few friends among entomologists, and perhaps his happiest illustrations are not from our branch of Science; but how few of us have really studied the question, and can say what Entomology does teach on the subject of specific variation!

Why should the colours of Lepidoptera be usually darker in Scotland and Ireland than in England? Why should Aplecta occulta be black at Rannoch (its head quarters), and in Yorkshire and Lancashire so light as scarcely to be distinguished by a tyro from Aplecta nebulosa, a southern insect which scarcely reaches Scotland? Have not all species a tendency to lose their distinguishing marks and approach allied forms at their outer limits of distribution? How is the gradual disappearance of the white spot on the wings of Lycæna Artaxerxes as we go South to be explained? Would the eggs of L. Artaxerxes or of a Rannoch A. occulta if fed up on English plants produce the English or the Scotch form of the insect?

But such questions are endless; a more extended knowledge of the range of our native species, and especially of their continental forms, would, I am persuaded, be of infinite service to us, even though it led us to doubt whether the term "species" is anything more than a "Geographical expression;" at present it seems to me that those whose knowledge is most exclusively confined to British insects are the most hasty and dogmatic in their opinions on species. It is much to be regretted that even the stupendous collections of the present generation are in most cases of but little use for the solution of such questions. "Whole rows" may be seen arranged on no other plan than to put the smallest specimens at the top, British and foreign, North and South inextricably mixed, so that the row be only made up; and he would be a bold man who spoke positively of the origin of any insect not captured by his own hand.

But I have wandered far from Loch Rannoch, and I fear my readers are disgusted at finding so promising a title has only led them into the undrained bog of the species question, so I will conclude by advising all who can to pay Rannoch a visit, assuring them they will never regret a few days spent in those ancient woods and by that bright lake if they can contrive to exist on mountain mutton, trout, oat-cake and whiskey, and do not mind their own being the only pair of trousers within a dozen miles.

EDWIN BIRCHALL.

Birkenhead, February 10, 1860.

## *Translated Life-Histories of Sawflies, from the Dutch of M. Snellen Van Vollenhoven.* By JOHN W. MAY, Esq.

THE following descriptions are translated from the Dutch of M. S. C. Snellen Van Vollenhoven, President of the Netherland Entomological Society, and are the first of a series of descriptions of indigenous Tenthredinous insects, in course of publication in the 'Transactions' of that Society, which I hope to be able to lay before British entomologists in the pages of the 'Zoologist. The descriptions in the original are accompanied by coloured plates of the different states of the insects. These could not be published in the 'Zoologist,' but I have retained the references to the figures in the text, and shall be happy to furnish copies of the different parts of the Netherland Entomological Society's 'Transactions,' containing the plates in question, to any one who may wish to have them. Each part will contain two or more plates, and the cost of each part will vary from 2*s.* 4*d.* to 3*s.* 8*d.*, as I am at present informed; at any rate I shall be happy to let any entomologist have the plates at the price I may have to pay for them.

John W. May.

19, Clifton Road East,
St. John's Wood.

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## Abia (Cimbex) ænea, *Klug*.

Imago: *Linn. Syst.* ii. 922, Tenthredo nitens? *Hartig, Blatt. und Holzwespen,* No. 7, p. 73. *Lepeletier, Mon. Tenthr.* No. 100, p. 37. *Klug, Blattwespen,* p. 91. *Leach. Zool. Misc.* No. 1, Abia nigricornis.

Larva undescribed.

Abia ænea, flavescenti-sericea, antennis nigris, femoribus æneis, genubus, tibiis tarsisque pallide flavis, alis fusco-variegatis; maris abdomine notato macula quadrata nigra.

On the 23rd of June, 1844, I found some larvæ of a Cimbex which were new to me. They were discovered on Symphoricarpus racemosus, a neat shrub, to be met with in nearly every garden in Holland. The larvæ in question were taken in a garden at Zwammerdam.

In common with all the known larvæ of Cimbex they have twenty-two legs, the fourth segment alone being apodal. The head is black on the crown and gray on the under side; the back purplish gray, and divided in its whole length by two orange-coloured lines of equal width; the abdomen and legs are gray. The claws of the six thoracic legs, which have a tubercle at the base (fig. 3), are brown. Between the orange lines are twelve large dark purple spots, and between each pair of these two smaller spots there are also some small spots on either side. The elliptical spiracles (fig. 2 *a*) have a corneous margin, which is prolonged downwards in two diverging brown stripes. Above each of the breathing pores from the third to the ninth is to be seen, by the aid of a lens, the opening or mouth of a duct closed by a valve, whence the larva, on being touched, discharges a colourless fluid, which I could not perceive to have any particular odour. This discharge of a fluid serves probably to defend the animal from the attacks of female ichneumons, so that I was surprised to observe that the larva did not emit the fluid every time it was touched, but allowed some time to elapse, as if it had first to awake from a half sleep.

The full-grown Cimbex larva is a handsome insect. When young it is gray, powdered as it were with white, having two yellow spots on each dorsal segment in place of the orange stripes; there are then four spots on the sides and one in the centre of the back. The length of the full-grown larva is 16 lines.

During the day they remain at rest on the branches or among the leaves, but on the approach of evening twilight they crawl higher up and begin to feed, gnawing the leaves from the edge towards the midrib. They are full-grown in the first days of July, and begin to spin up between the twigs and among the fallen leaves. The cocoons are hard, and made of a brown silky material. The latest larvæ which I observed to spin up made yellow cocoons.

On the 1st of April, 1845, I opened two yellow cocoons, and found pupæ (fig. 4) inside. The anterior part of the body was brownish yellow, and the abdomen green, with a rather broad brownish stripe over the back; the compound eyes brown, and visible through the outer skin; between the eyes hung the white antennæ, which are easily seen to be six-jointed; attached to and beneath the head the jaws and palpi were readily distinguished; the six legs lay with the femur uppermost, and the tibiæ and tarsi bent under against the thorax and abdomen, the last pair extending beyond the fifth segment of the abdomen, all yellowish white; the wings were concealed by the legs, and the back was bent and of a brown hue. The boring apparatus was easily recognised in both these females.

On the 20th of April these two had moulted for the last time, but for the first three days after they had not acquired the use of their legs, and lay mostly on their backs. A female made her appearance from an unopened cocoon on the 24th, and another on the 28th. These were strong on their legs from the first, but did not fly, even when placed in the sunshine. It is worthy of remark that during that year my cocoons produced females only, and that in the following year from eight cocoons I reared exclusively males. The latter all appeared in the beginning of March, which is probably to be attributed to the milder temperature. I have not found the larva since, and I never took the perfect insect on the wing. The length of the female is 5 lines, and of the male 4 lines. They are both of a dark bronze colour, the head and thorax thickly covered with yellowish brown hairs. Antennæ black, six-jointed, the last three joints forming the club; they are a little longer in the male than in the female. As the form of these antennæ is somewhat different from that of the other species of this genus, I have given, at fig. 7, an enlarged representation of a male and female antenna. The compound eyes approach much nearer to each other on the crown of the head in the male than in the female. The abdomen is bronze-coloured, and covered with a short, shining, silky, procumbent pubescence; in the male the fourth, fifth and sixth segments have a black velvety spot in the centre (fig. 6). The legs are light yellow, having the coxæ and femora bronze. The coxæ and femora are covered with long soft black hairs; the tibiæ are armed with two spines; on the under side of each joint of the tarsi, except the last, is found an oblong sucker with a soft margin, which I have represented, enlarged, at fig. 11; the wings are yellowish, with a fuscous costal nervure; stigma brown, and a brown stripe running obliquely downwards from the costal nervure, and thence forward again to the stigma; behind this is a smoke-coloured spot. This marking is less distinct in the female: see fig. 5, and for the neuration of the wing fig. 12.

The perfect insects were very sluggish, and when in the shade remained motionless; on being brought into the sunshine they flew backwards and forwards with a heavy flight, making a humming noise. I opened a female for the purpose of examining the saw, and found that in this species its form is much the same as in the other known Cimbices, only somewhat less curved at the extremity (fig. 8). The edge of the saw was distinctly furnished with implanted dentate lobes, which projected considerably (fig. 9).

From the larvæ of these saw-flies were produced both sexes of Exetastes Cimbicis, *V. Voll.*, a new species, of which I have given a description in the 'Bouwstoffen voor eene Fauna van Nederland' (Materials for a Fauna of the Netherlands), ii. 281.

I take this opportunity of stating that a specimen of the very nearly allied Abia fasciata, *F.*, has been added to the collection of the Netherland Entomological Society, subsequently to the publication of the Catalogue of Netherland Hymenopterous Insects, and of the occurrence of which in this country no mention is made in the 'Bouwstoffen voor eene Fauna van Nederland.' The specimen in question was presented by Mr. Lodeesen, who, however, could not remember whether he took it in the province of Holland, Utrecht or Gelderland. The species must be inserted between the numbers 4 and 5 in the catalogue.

### NEMATUS CÆRULEOCARPUS (*Hartig*).

Imago: *Hartig, Blatt. und Holzwespen*, No. 8, p. 187.

Larva: probably that described by Dahlbom under the name of Tenthredo crassa, *Fallen*, in the 'Forhandlinger ved de skandin, Naturförskeres fjerde Möde,' Christiania, 1847.

Nematus niger, nitidus, mandibularum et palporum basi sordide rufa, coxarum apice, femoribus et tibiarum parte majori, necnon alarum radio rufis, stigmate cæruleo-nigro, cellula lanceolata pedunculata.

In the month of September I found some larvæ in the wood at the Hague, on young poplars by the side of the lake. They were clinging close to the petioles of the leaves: their colour and general appearance made me think they were larvæ of Hylotoma. Some years after I found a similar full-grown larva on a weeping willow in the town of Leyden; and shortly after I discovered some more, in different stages of growth, on some poplars outside the town. When young they ate holes in the leaves, but on getting older they fed also from the margin towards the midrib. They attain a length of 1 inch (fig. 1), and are of a bluish green colour with brownish yellow thoracic legs; these are provided with sharp brown claws. The head is pale brown, with two darker stripes intersecting at right angles on the crown (fig. 2). The skin is so transparent that the tracheæ and their branches may be easily perceived. Two dark stripes run along the back of the larva as far as the penultimate segment; in some individuals these are only as it were indicated at either end. The skin is also irregularly covered with black spots on the sides; these spots run into lines, more especially above the legs; from each spot grows a short bristly hair. The two terminal segments are without hairs or spots, but the last has two hairy protuberances on the side, near the anus, and above these, two yellow horns tipped with red (fig. 3).

After the first moult the larva is of a darker green, with blackish brown head and dark horns above the anus.

At the end of September the larvæ spun up among the withered leaves in neatly constructed cocoons, which on being opened appeared to be double; these were coarser on the outside, and of a dark brown or deep yellow colour, on the inside finer and of a pale brown colour or white. This shows that Hartig's assertion is incorrect, namely that the Nemati are contained "im einfachen dichten aber nicht dicken Cocon" ('Die Familien der Blatt. und Holzwespen,' 180).

The larvæ which I had taken at the Hague appeared in the month of October of the same year; on the other hand, those which I had taken at Leyden remained over the winter, and about the end of April I found in one of the cocoons a small shining green pupa of a glassy appearance. Antennæ, palpi and legs pale green; eyes black; the ocelli were very perceptible through the outer skin. The perfect insect emerged from the pupa state in May. This difference in time can probably only be accounted for by a difference in temperature.

The perfect insects (fig. 4) are 4½ lines long, the males somewhat less. The whole body is of a blue-black colour, very shining, the head and thorax finely punctulate. The antennæ are three lines long and black; the joints sharply divided; the palpi are brownish red at the base. The meta-thoracic spots are dirty white; in the female the abdominal segments have very narrow gray margins. The legs are red, with black coxæ; the hind legs have the tarsi and the posterior half of the tibiæ black. In some individuals the coxæ are one half yellowish red, others have the tibiæ black, with the base red. The wings are transparent, yellowish at their insertion; the nervures partly red and partly black, with a large bluish black stigma; the nervure between the first and second submarginal cells is almost always merely indicated. The perfect insects seldom appear, at least I have rarely observed them, and Dr. Hartig has seen only one specimen, which was minus the hinder tarsi.

I have examined the parts of the mouth of this species of Nematus. The labrum (fig. 5) is broad and but little protuberant, but has a semicircular appendage; the mandibles (fig. 6) are broad and short, curved, with a sharp-pointed apex and a small tooth in the middle; the maxillæ (fig. 7) are corneous, with a membraneous discoidal apex, and a sharp-pointed membraneous appendage on the inside; externally are the five-jointed maxillary palpi, the third joint being the longest and thickest; the labium (fig. 8) is quadrate, but rounded at the apex, with three processes, of which the middle one is very narrow; on each side is a palpus consisting of four joints, of which the second is the thickest, the terminal joint is abruptly rounded off.

The abdomen of the male (fig. 9), has an oval plate on the seventh segment. The edges of the corneous plates of the dorsum of the abdomen extend some distance over the ventral plates, so that they are always visible on the under side.

An enlarged view of the saw and ovipositor of the female is given at fig. 10; the saw is lighter in colour, and has teeth on its free edge arising from the projecting margin of its divisions. The ovipositor itself is curved, and, as well as the saw, is traversed by diagonal lines, giving it the appearance of being divided into separate plates.*

*Habits of Nyssia zonaria, and Offer of Specimens.*—Nyssia zonaria is very abundant this spring: I have taken it in great numbers and fine condition during the last two weeks, and shall be happy to distribute my duplicates at the close of the season, if those in want of the insect will apply to me. It is an extremely sluggish insect during the day, sitting motionless on the sand and feigning death when touched: the males are mostly found partially concealed behind the tufts of grass which dot the sand-hills; about sun-set they wake up and buzz rapidly over the sand in search of the apterous females, which are strewn about, without the smallest attempt at concealment, in such numbers that they might be picked up and measured like shrimps, by the quart. At present I am only acquainted with two spots on the Cheshire coast where N. zonaria occurs, but no doubt there are many others which will be stumbled on accidentally, as these were. The sedentary habits of the female necessarily tend to localize the insect Both the known stations are little hollows among the sand-hills of perhaps an acre in extent, outside of which not a specimen is to be found, and the keenest collector might pass within half a dozen yards of a spot where they are sitting on the sand by hundreds, and not see one. The larva is found from May to August, feeding on yarrow and dwarf sallow.—*Edwin Birchall; Oakfield Villa, Birkenhead, April* 4, 1861.

*Larva of Anticlea berberaria.*—I have often found the larva of Anticlea berberaria, in this neighbourhood, feeding upon Berberis vulgaris; but none that I have had agree with Mr. Newman's description of it (Zool. 7361), either in colour, habits or food-plant. Mine were rough, and speckled with red-brown and gray; but as I cannot from memory give a sufficient description of them, I shall be happy to forward some this season. I find them at the end of June, and again in September; the imago in May and August. Thinking there is some mistake in the name of the larva is my apology for writing this note.—*Thomas Brown;* 13, *King's Parade, Cambridge.*

[I shall be extremely obliged for the larvæ so kindly offered: with regard to my mistake, I believe I shall be able to give the correct name to the larva I described as that of Anticlea berberaria: many thanks for this correction.—*Edward Newman.*]

*Oviposition of Xanthia ferruginea.*—At the end of October I succeeded in getting a few eggs from a female taken at sugar. When first laid they were lemon-colour, but soon turned reddish. They were kept in a cool, rather damp room, and hatched

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* M. Snellen van Vollenhoven has informed me that since the above was written the imago of this insect has appeared with him on the 3rd of April, and that the larva has again been met with on willows.—*J. W. M.*

March 3. The larvæ are feeding well upon the flowers of the wych elm (*Ulmus campestris*).—*H. Harpur Crewe; Drayton-Beauchamp, March* 25, 1861.

*Oviposition, &c., of Thera juniperata.*—During the month of October, 1860, I took several females of this insect. One of them deposited about a score of whitish yellow eggs, on a sprig of juniper. These I kept all the winter in a cold room without a fire. They hatched March 16—20. The young larvæ are feeding well upon the buds of the wild juniper.—*Id.*

*Economy of Micropteryx semicuprella.*—The larva lives in young hazel-leaves, making brown mines, which are at first serpentine, of gradually increasing breadth, and always close to the margin of the leaf. At the middle or end of May it descends to the earth, and the perfect insect is produced in the following April. Larva 2 lines long, apodal, slender, almost cylindrical, gradually tapering from the slightly broader pectoral segments. The colour is yellowish white, with the alimentary canal showing through green. The skin is naked; under a lens it appears almost granulated: on each segment is a smooth transverse fold. Head brown, very small, with white bristles; jaws squarish, with four blunt little teeth on the "kaufläche:" prothorax with two brown spots beneath; above with four small brown blotches placed in a curve; anteriorly it appears rather darker from the retracted head showing through. On the sides of each of the abdominal segments is a small raised spot, uncoloured, directed externally, and furnished with a short hair, and near it, more towards the under side, two small bristle-like hairs are perceptible. Anal segment cylindrical, with two bristles projecting backwards."—*Kaltenbach, as translated by Mr. Stainton in the 'Intelligencer,'* x. 16.

*The Emerald Wing.*—Between the little river which runs through the plain at the head of the Bay and the stony, rank, weed-grown little hills on the right, is a narrow grassy strip, thickly studded with the green culms and broad white umbels of a gigantic species of Archangelica, and where Solomon's-seal, and Trollius orientalis grow in the wildest profusion. A long gray Lixus bores into all the stems of the Archangelica, drilling round holes with his cylindrical snout. Here Buckley finds an emerald wing. It is the elytron of a genus of Buprestidæ, and is greatly admired by the coleopteromaniacs. Every man of them is desirous of obtaining the perfect insect. Some go north and some south; the plains are scoured, the mountains climbed, and the valleys searched in vain. "'Tis not in mortals to command success," but I think it rather hard that unsuccessful efforts are usually consigned to oblivion. The results so triumphantly set forth,—the new genera discovered, and the beautiful forms for the first time brought to light by the insect-net or the dredge,—are very gratifying, and are duly recorded; but who shall chronicle the failures,—the keen disappointments; the labour thrown away, and the energy and enterprise fruitlessly expended; the tons of mud sifted, the bushels of sand examined, the huge stones upturned, and the bushes beaten in despair; no fragment to kindle hope, no beetle to reward the patient enthusiast. Collinson the indefatigable is seen severely scrutinizing the fissured bark of old trunks and the sound bark of stately trees, peering, like a jackdaw, into rotten wood, or scratching up the earth like any terrier anxious about a rat. On a sudden he rivets his inquiring gaze on a young oak, and gives an apology for an Indian war-whoop; for he sees the owner of the emerald wing sunning himself on the tender green surface of a leaf. I remember a great hunt for another emerald beetle (*Drypta emarginata*), with old Turner, in Hampshire, at pretty Alverstoke. In vain we toiled and tore up the grassy bank; the old man growled and swore in a deep undertone at Anchomenus prasinus, which was always running out, giving him false hopes. At length he finds a veritable Drypta. Drawing a long breath he exclaims, this time aloud and jubilant, "Glory, &c. &c. &c.! I got 'un!"—*Arthur Adams; St. Vladimir Bay, Manchuria.*

*Notes on two New Brachelytra.*—I have taken and determined two Brachelytrous insects which I believe have not yet been recorded as British.

1. *Oligota apicata*, Erichs. It belongs to the ovate section, averages about half a line in length, and is at once distinguished from all its British congeners by the two last joints of the abdomen and the legs being a clear fulvous-yellow, and by the two first joints of the antennæ being much longer than the succeeding ones, but the second about the same length as the first. I took eight specimens from the *débris* of fern, in an old shed at the Holt Forest in Hampshire, on the 1st of April, 1861. The insect is remarkable for the cool and deliberate way in which it slowly marches over the paper on which the "shakings" are placed. Erichson says he has taken one specimen only.

2. *Bledius crassicollis*, Erichs. It belongs to the section which has thorax and head unarmed, and is the only British species, I believe, which has a smooth space and no furrow along the middle of the thorax, which is also strongly punctured. My specimens have all testaceous-red elytra, with a darkish stain near the scutellum. The elytra are coarsely punctured. The abdomen is black, with testaceous apex. It is a small species, about the size of B. unicornis, larger only than B. arenarius, of those which I possess, averaging 1¾ line. I took many specimens from a sandy bank near Walmer, on the 8th of August, 1857, and have given them away as B. crassicollis, but have never published any account of the insect. I have seen none but my own specimens.—*John A. Power; 52, Burton Crescent, April* 17, 1861.

*Captures of Coleoptera at Sanderstead.*—On the 24th of March we spent a most pleasant and profitable day at Sanderstead Downs, near Croydon. Among a whole host of common things we found the following:— Panagæus quadripustulatus (5), Mycetophorus splendidus (12), M. angularis (1), M. punctatus (2), M. splendens (1), Bolitobius analis (5), Acidota cruentata (1). On the 6th inst. we again took two more P. 4-pustulatus.—*A. & M. Solomon; 16, Graham Villas, Pownall Road, Dalston, April* 19, 1861.

*Capture of Meloe cicatricosus.*—On the 14th of April I captured twenty fine specimens of this insect at Ramsgate.—*A. Solomon.*

*Plague of Ants in Honduras.*—As for the ants, their name is legion. I do not know whether they should be called buccaneers or filibusters, but they appropriate everything they can get at, and locate themselves everywhere. They are wonderfully industrious in carrying out their predatory views, and display a great contrast to the inhabitants of Honduras, who do not know what industry means, and abhor continuous labour. There are two colours of ants, black and red, and a great variety of sizes. Some of the large black ones are half an inch long; those in the houses are generally of the smaller sizes. Every tree and bush is infested with some kind or other of them. If you shoot a bird and do not speedily pick it up it will be covered with them; if you lay a bird down for a few minutes, beware how you take it up, for if you do so incautiously they will be on your hand in no time, and resent your claiming your own by instant biting. They are most savage little wretches when interfered with or molested. Take care also how you sit down, either in the forest or anywhere out of doors, or you may jump up again quicker than pleases you. The house we occupied at Comayagua was overrun by ants. They were constantly occupied in excavating the walls and depositing the earth in the shape of pills in large heaps on the floor below. Nothing would stop them; gunpowder was tried, and arsenic mixed with sugar was poured down their holes, but to no purpose; still the mining went on: the tables and food were overrun, and the latter damaged by them; they got into tea, beer, wine, and everything else that was left exposed; if a piece of bread, meat or fruit was left on a table for an hour or so, they would find it out and would soon be seen in a long stream passing to and fro over the floor and up the legs of the table. The only way we could keep our bread from them was by putting it in a basket suspended from a beam by a single string. I was obliged to do the same with the birds shot, for if left on a shelf or table the ants would quickly find them.—*G. C. Taylor, in* '*Ibis,*' ii. 21.

*Australian Ants burying their dead.*—One very hot and cloudless day, when not a breath of air stirred the leaves, my eldest boy (four years old), coming up from the beach, fatigued and hot, threw himself on a grassy mound near where I was sitting, and remained quietly enjoying the rest, and anticipating the pleasure he would have in showing to his sister the pretty shells and corals he had found. I was startled by a sudden scream, such as one only gives when in terrible pain. A snake was my first thought, and in horror I went to the child; but was at once reassured on seeing him covered by "soldier ants," on whose nest he had unwittingly lain down. Some of the insects still clung on with their forceps, and stung my poor boy, who roared with pain at every fresh attack, whilst I killed them as fast as I could, assisted by the nurse. At length all were removed, about twenty being left dead on the ground. Going to see the little fellow bathed with something to ease the pain, I was absent about half an hour, and then returned to the same place, when I saw a large number of the ants surrounding the dead ones. Being fond of Natural History, and having read much concerning the instinct of ants, I determined to watch them closely now. At last four ran off very quickly, and I followed them until I saw them enter a hillock containing an ants' nest, which we had in vain tried to get rid of on account of the annoyance caused by their close vicinity to our sitting-tent. They remained here about five minutes, when a number more came out two by two, and proceeded slowly to the place where their dead companions lay. Here they seemed to wait for something; and presently we saw coming from the other side, near the creek, a number surpassing those I had followed, and halting in the same place. Then two ants took up one of the dead ones and marched off, followed by two others as mourners; then two others entered the procession with a second dead ant, succeeded, in the same way, by another pair, and so on, until all the dead were taken up—a number of, I should think, two hundred bringing up the rear. Following the train, I found that the two empty-handed followers relieved their fellows in advance, the latter falling behind in the place of those who relieved them, and thus continuing to alternate from time to time. They had now gone a considerable distance towards the sea-side, when they stopped at a sandy hillock, where those who marched in the rear of the procession commenced operations by making holes; but I soon observed that only about half the number took part in this employment. When a sufficient number of graves had been dug, the dead bodies were laid in them, and I found that those ants which had hitherto stood idle were deputed to cover them in. About six would not stir from their places, and on these the others fell and killed them; whereupon they made a single large pit at a distance from the other graves, into which all the six were put and duly covered up. The ants then all paired off and marched back to the scene of slaughter, where they remained together for a few minutes, when each company left for their own habitation. The observation of this curious proceeding gave me great pleasure; and I had frequent opportunities afterwards of seeing the insects act much in the same way. If one of the "workers," however (who are much smaller than the rest), were killed, it was buried where it fell, and no friends attended the funeral.—*Mrs. Lewis Hutton, in 'Proceedings of Linnean Society,'* Vol. v. No. 19, p. 217. [I may say that had this communication reached my hands through any ordinary channel I should have respectfully declined it as a hoax; but, seeing it has received the *imprimatur* of those athletes of Science who decide on the propriety of publishing or rejecting the communications transmitted to the Linnean Society, I have no choice but to accept it as veracious. I would, however, caution my younger readers from drawing any inferences as to the habits of ants in general, or even of Australian ants in particular, from the remarkable fact here related of an individual nest.—*Edward Newman.*]

*The Wreck of the Medusa.*—Fleecy white clouds sail softly across the pale blue sky, and a single skylark sings clear and loud overhead. From the bay on the south side of the Cape I pass to the bay on the north side. I reach a sandy down, where many flowers remind me of home and "Merrie England." I see Erodium maritimum and Linaria vulgaris, but not the "wee modest crimson-tipped flower" we all love so well; in its place is Dianthus chinensis; this is everywhere, so is a pretty Campanula; and springing up in dry stony places are the spikes of a white-flowered Sedum, looking just like a pigmy Aloe in a pigmy desert. Grasshoppers leap up around me in prodigious numbers, and among the stunted shrubs slowly stalks the grass-green Mantis. The humming-bird hawk-moth hovers around the spikes of the Sedum, and flitting about are painted lady and clouded yellow butterflies. On turning the stones we find a bronze Chrysomela, an Opatrum and an Akis; Cymatia runs rapidly out, and there is generally a dark Lithobius. We come now to the edge of an abrupt, broken, yellow-fronted cliff, whence issues the harsh, grating song of the Cicada, and where, flying backwards and forwards, are the blue rock-pigeons. We descend the cliff, and before us is a blue bay with blue hills in the distance. Around us are brown, flat-topped and angular rocks, bristling with black patches of juvenile mussels, and rough with white patches of juvenile barnacles. In the little pools crawls Lampania zonalis the ubiquitous, and therein disport lively, big-headed gobies and the sly, artful blenny. Here also are seen running about, in a busy, cheerful, bustling manner, the beautiful golden plover, the red-billed oystercatcher, the greenshank and the sanderling. We are now on the "lean ribbed" sand, a tawny waste extending right and left for miles. The spotted teal are feeding at the margin of the water; but what is that mysterious object rolling and tumbling in the ripple of the tide? It is an immense Rhizostoma, stranded and helpless, at the mercy of the waves. It is certainly the biggest jelly-fish I ever saw, measuring three feet across the disk. The unfortunate Medusa is not only wrecked, but eaten. Chinamen come down, like Riff pirates or Cornish wreckers, to the scene of the disaster, and cut off huge slices of the firm translucent blubber, and, carefully wrapping them in clothes, carry them away for gastronomic uses. Doubtless their insipid mess of boiled rice is greatly improved thereby at evening "chow-chow." This is the only instance I have known of any of the Acalephæ being used as food.—*A. Adams; Cape Vansittart, Gulf of Lian-tung.*

*The Range of Echinoderms in Depth and Space.*— The following notes on the geographical and bathymetrical distribution of the genera of Echinoderms dredged by me in the Yellow Sea and the Sea of Japan may be useful to those especially engaged in the study of sea-urchins and starfishes:—

### A. KOREAN ISLANDS.

Haul 1.— Quelpart Island; seven miles from the shore. Fifty-four fathoms. Black sandy mud. Echinus, Echinorachnius, Ophiura, Ophiocoma, Sipunculus.

Haul 2.—Port Hamilton, Korean Archipelago; half-a-mile from the shore. Ten fathoms. Black sandy mud. Echinus, Echinorachnius, Scutella, Astemia, Sipunculus.

Haul 3.—Chosan Harbour, Korean Peninsula; four hundred yards from the shore. Six fathoms. Mud. Thyone and Sipunculus.

Haul 4.—Chosan Harbour; three hundred yards from the shore, in a tideway. Two and a half fathoms. Sandy mud and weeds (Zostera and Sargassum). Asterias and Cribella.

Haul 5.—Straits of Korea. Two hundred and eighty-eight fathoms. Rocks and sand. Ophiocoma (several living specimens).

### B. COAST OF MANCHURIA.

Haul 1.—Off Sunday Island; half a mile from the shore. Twenty fathoms. Sandy mud. Echinorachnius (dead), Pentacta and Bolinus.

Haul 2.—Off Castle Point; a mile from the shore. Thirty-seven fathoms. Rounded pebbles and broken coral. Cribella and Ophiocoma.

Haul 3.—Sio-Wu-hu Bay; fifty yards from the shore. Four fathoms. Stones and sand. Sipunculus, Cribella, Ophiura and Asterina.

Haul 4.—St. Vladimir Bay. From three fathoms to low water. Rocky bottom. A deep blue Asterina with a centre of dull red; a little Palmipes abundant in the rock-basins.

### C. JAPANESE ISLANDS.

Haul 1.—Off Okosiri Island; six miles from the shore. Twenty-five to thirty-five fathoms. Coral and rocky bottom. Cidaris, Echinus, Solaster, Cribella, Ophiocoma, Pentacla, Psolus and Sipunculus.

Haul 2.—Off Rifunsiri Island; four miles from the shore. Thirty-five fathoms. Coral, broken shells and stones. Solaster, Cribella, Ophiocoma, Psolus and Holothuria.

Haul 3.—Amiva Bay, Island of Sagaleen; three miles from the shore. Seventeen fathoms. Stones and gravel. Solaster, Uraster, Cribella, Ophiura, Echinus, Psolus and Thyone.

Haul 4.—Amiva Bay; two miles from the shore. Twenty-three fathoms. Soft black mud. Spio.

Haul 5.—Sea of Okhotsk; seven miles from the Island of Yesso. Seventeen fathoms. Dead shells and sand. Asterina, Cribella and Ophiocoma.—*A. Adams.*

## *Proceedings of Societies.*

### ENTOMOLOGICAL SOCIETY.

*April* 1, 1861.—J. W. DOUGLAS, Esq., President, in the chair.

#### *Donations.*

The following donations were announced, and thanks ordered to be presented to the donors: — 'Smithsonian Contributions to Knowledge,' Vol. xi.; 'Instructions in reference to collecting Nests and Eggs of North-American Birds;' 'Catalogue of the described Lepidoptera of North America,' prepared for the Smithsonian Institution by John G. Morris; presented by the Smithsonian Institution. 'New Genera and Species of North-American Tipulidæ with short Palpi, with an Attempt at a new Classification of the Tribe,' by Baron R. von Osten-Sacken;' by the Author. 'Journal of the Proceedings of the Linnean Society,' Vol. v. No. 19; by the Society. Leydig's 'Natural History of the Daphnidæ—Reviewed by J. Lubbock, Esq.'; by the Author. 'On Sphærularia Bombi,' by John Lubbock, F.R.S., F.L.S., F.G.S.; by the Author. 'Exotic Butterflies,' Part 38; by W. W. Saunders, Esq. 'The Zoologist' for April; by the Editor. 'The Journal of the Society of Arts' for March by the Society. 'The Entomologist's Weekly Intelligencer,' Nos. 231 to 233; by H. T. Stainton, Esq.

#### *Election of a Subscriber.*

Aaron Solomons, Esq., of 16, Pownall Road, Dalston, was elected a Subscriber to the Society.

#### *Exhibitions.*

Mr. F. Smith exhibited a nnmber of Myrmedonia funesta and other Coleoptera, found in a nest of Formica fuliginosa at Earith.

Mr. Fereday exhibited some specimens of Nausibius dentatus, *Marsham*, bred from the fruit of Dimocarpus Litchi of China.

Dr. Knaggs exhibited a small mutilated larva, apparently lepidopterous, respecting which he communicated the following:—

"A medical friend was called to see a child, ten years of age, who was suffering from vomiting of blood and passage of blood by stool. On examination of the pharynx he observed that blood was trickling from the posterior nostrils; during the examination the child expressed an inclination to sneeze, upon which a white pocket handkerchief was applied, in order to see if any blood was thereby ejected; there was, however, nothing but mucus and the small larva produced, which was alive at the time, but had since been crushed by accident." Dr. Knaggs observed that instances of insects being ejected from the nostrils by sneezing had been previously recorded in the 'Proceedings' of the Society. The injured larva he now exhibited was probably that of Endrosis fenestrella, a very common species everywhere in houses; and he considered it not impossible that it was on the handkerchief before the sneezing took place.

Mr. M'Lachlan exhibited specimens of a trichopterous insect new to Britain, the Goniotaulius concentricus, *Kolenati*, not Phryganea concentrica, *Zett.;* Stenophylax vibex, *Brauer*, not of Curtis. Of this species about a dozen specimens were taken in 1860, near Ranworth, by Mr. Winter; it is a common species on the Continent, and variable, the typical specimens from Russia being smaller and darker than those of Western Europe.

Mr. Stainton exhibited cases of two species of the long-horned moths. One case, which belonged either to the genus Adela or the genus Nemophora, was composed of several pieces of brown leaves added in succession: the larvæ inhabiting this sort of case were feeding on withered oak-leaves. The other case, which probably belonged to the genus Nemotois, was formed by successive additions around a brown oval nucleus, and was much contracted in the middle: the larvæ inhabiting this case were feeding on the green leaves of Ballota nigra. The Adela? cases were found by Mr. Healy, at West Wickham, by searching amongst the fallen oak-leaves. The Nemotois? cases were collected by Herr Schmid, of Frankfort-on-the Maine, around plants of Ballota nigra, the lower leaves of which were much eaten by them.

Mr. F. Walker exhibited a large box of North-American Hemiptera, and made the following remarks, which occurred to him while inspecting this collection:—"It is well known what a great affinity part of the fauna of North America bears to that of Europe; and this likeness between the two faunas increases northward until they become nearly identical; and there are indications that the separation between the eastern and western continents took place at a later period in the northern regions than in the southern regions. The separation between the northern fauna and the southern fauna is much less complete in the western countries than in the eastern countries; and this is owing to the divisions in the latter by means of seas and mountains, which are comparatively wanting in the western continent. The fauna of the Central States of North America and that of the eastern slope of the Alleghany mountains appear to be equally similar to that of England; and in the plains of the United States the faunas of the north and of the south are comparatively mingled together, whereas in the regions of the Old World they are nearly separate, and in the southern part the northern fauna only appears on the mountain ranges. I will conclude by enumerating a few of the species in this box which appear to be most nearly allied to the British Hemiptera, or to be identical with them:—

Coremilæna unicolor
„ pulicaria
Ophthalmicus niger
Anthocoris pseudo-chinche
Neides spinosus
Lygæus linearis
„ bioculatus
Eurymerocoris nigritulus
Rhopalus maculigerus
Sulda læta
Zosmenus latus
Tingis hyalina
Reduvius personatus
Nabis ferus
Hebrus americanus
Gerris apterus
„ marginatus
Ranatra fusca
Corixa annexa
Aphrophora quadrinotata
Psylla diaphana

The American Reduvius personatus seems to be sufficiently distinct from the British species to be entitled to receive a new name."—*E. S.*

## NORTHERN ENTOMOLOGICAL SOCIETY.

*March* 16, 1861.—C. S. GREGSON, Esq., President, in the chair.

A vote of thanks to the late President, B. Cooke, Esq., was accorded with great cordiality.

### *Exhibitions.*

By Mr. Hague. Noctua ditrapezium, from Conway (see Intel. No. 230).

By Mr. Harrison. Miana captiuncula, *Tr.*, captured by himself at Warbrick Moor, near Liverpool.

By Mr. Gregson. Lithosia caniola, from his cabinet; taken by himself, July 12 to August 2, 1856, and 1857, in Cheshire, where it was not scarce. He also exhibited specimens of Dianthœcia ———? taken by Messrs. Tiltman and Nicholson, on the coast of Cumberland; a singular variety of Arctia caja; Arctia Menthastri, *var.* Walkerii, presented to him by Mr. Tiltman; and a series of varieties of Dianthœcia carpophaga, from light buff to reddish brown.

By Mr. Miller. A singular variety of Chrysophanus Phlæas.

By Mr. Hodgkinson. Coleophora murinipennella, bred near Preston; a singular variety of Arctia caja; and a series of Grapholita nisana? fed on white poplar. This insect never varies like the sallow-catkin feeder, but is always a dull greenish drab.

By Mr. Greening. Pupa of Anthocharis Cardamines, the larva of which had fed upon Leguminosæ; a fine series of Leucophasia Sinapis, *Lin.*, and a fine series of L. Sinapis, *Haworth* (Leptoria candida, *Westwood & Humphreys*, plate 6, fig. 11).

The President also exhibited fine series of these two species of Leucophasia (British), and a number of foreign specimens of the same genus, including L. Lathyri, *Dup.*, Erysimi? *Bork.*, &c., from Switzerland, Bavaria and France, illustrative of a paper he read upon the genus Leucophasia, which paper was further illustrated by a series of lithographic figures he had drawn and printed for distribution amongst the members.

The President likewise exhibited a box of curious varieties of Abraxas ulmaria, recently added to his collection. One of them, obtained from Mr. J. Blakeley, has one fore wing dark and unicolorous, the other singularly white.—*G. H. W.*

*Case of Butalis incongruella found on Birch.*—A case of this species has been sent to me for determination by the Rev. H. Burney, who found it on a birch-tree in Cannock Chase.—*H. T. Stainton* (*in the 'Intelligencer'*); *April* 22, 1861.

*Elachista Larvæ.*—From Professor Fritzsche, of Freibourg, I have just received two packets of Elachista larvæ; those on the Agrostis stolonifera were already in pupa, possibly they may be E. subnigrella; those on Poa compressa with black heads and black marks on the second segment, appear to be E. Gregsoni. It is very pleasant to find that Elachista-hunters are now at work in Saxony.—*Id.*

LINNEAN SOCIETY.—It is announced that Professor Bell, who has gained the sincere respect and heartfelt esteem of the Fellows of the Linnean Society, by the admirable manner in which, for eight years, he has presided over that body, is about to vacate the Chair at the ensuing Anniversary. Every Fellow who has attended the Meetings during Mr. Bell's Presidency must deeply regret this step; but a few of the older Fellows, who have found Mr. Bell inexorable on this point, desire to suggest the name of Mr. W. Wilson Saunders as his successor. Mr. Saunders' urbanity, his kindness of disposition, his scientific zeal and industry, and, lastly, his unequalled liberality in the cause of Natural History, point him out as pre-eminently fitted to fill the vacant Chair.

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### To Oologists.

TO be DISPOSED OF, a COLLECTION of BRITISH BIRDS' EGGS, contained in a first-class Mahogany Pedestal Cabinet of Fourteen Drawers, each Drawer with Compartments; the whole sufficient to contain the entire number of species known in Britain. The Cabinet contains 700 Specimens and 225 Species, all in the finest condition, well-blown, in numerous varieties, and arranged in systematic order.—Apply to T. Cooke, Naturalist, 513, New Oxford Street; or J. Wittaker, Langham Bazaar.

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### To Coleopterists.

TO be DISPOSED OF, TWO SPECIMENS and living LARVÆ of the rare LUDIUS FERRUGINEUS, in perfect condition. Bred by Mr. G. Boddy. Price 30s. each; larva, alive, 10s.—Apply to T. Cooke, Naturalist, 513, New Oxford Street; or J. Wittaker, Langham Bazaar, Regent Street.

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### Books, Hives, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Room, 38, King Street, Covent Garden, on FRIDAY, the 17th of May, at half-past 12 precisely, the small LIBRARY of BOOKS formed by the late BRACY CLARK, Esq., consisting principally of Entomological and Veterinary Works, some of which are of considerable interest and rarity, and of early date. Also the entire Stock of HIVES and HOUSES, as manufactured by Mr. Minton, who is relinquishing the trade. Also working MODELS of all the recent Inventions of BEE-HIVES, together with the valuable LIBRARY, consisting of all the known Works on the subject, commencing from 1600; and the usual Appendages for practically working Apiaries.—May be viewed on the day prior to and morning of Sale, and Catalogues had.

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### To Entomologists.

MR. J. C. STEVENS begs to announce that he will SELL by AUCTION, at his Great Room, 38, King Street, Covent Garden, on THURSDAY, May 23rd, at half-past 12 precisely, several small COLLECTIONS of BRITISH LEPIDOPTERA, and Insects of other Orders, mostly in a fine state, and many scarce.—Catalogues are preparing, and will be ready a week before the Sale.

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*Price Sevenpence, post free,*

SUGGESTIONS for FORMING COLLECTIONS of BIRDS' EGGS.—These 'Suggestions' are from the pen of Mr. Newton, than whom no one was ever better qualified for the task. The first object is to identify the egg, to be quite sure to what bird it belongs. Mr. Newton justly considers that an egg wrongly named is worse than no specimen at all. As soon as the egg is positively identified the next object is to authenticate it, by attaching such a mark as can neither be removed nor obliterated. Then follows a full and most minute description of the mode of blowing eggs, with figures of all the instruments necessary to be used: it is expressly explained that no hole should be visible, and it is also explained how to avoid this: on no account whatever should there be a hole at either end, and there should be but one hole. The difficulty of removing the contents from eggs that have been sat on and nearly hatched is entirely overcome; and the proper instruments to use are not only described but figured, and the requisite information is given where they may be obtained. Finally, we are shown how to strengthen the shell of delicate eggs before drilling the hole through which their contents are to be emptied.

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